Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 5,0 d 1
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1150 R 92-1
0 460 416 033

supersedes
company Steyr
engine WD 611 42

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/

Pre-stroke setting 0,2 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,6- 4,0	mm		
1.2 Supply-pump pressure	800	5,4- 6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	65,0-66,0	cm³/1000 strokes		3,5 (4,0)
1.4 Idle regulation	300	13,0-17,0	cm³/1000 strokes		3,0 (4,0)
1.5 Full-speed regulation	1230	21,0-27,0	cm³/1000 strokes		
1.6 Start	100	min. 80,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1150
	mm	0,5-1,3(0,2-1,6)	(3,1-4,5)	6,9-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min	500		1150
	bar (kgf/cm²)	4,0-4,6		6,9-7,5
Overflow delivery	n = rev/min	500		1150
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	1300	max. 1,5	
	1230	(19,0-29,0)	
	1180	49,0-55,0 (47,0-57,0)	
	1130	67,5-69,5 (65,5-71,5)	
	800	(62,5-68,5)	
	500	55,5-58,5 (53,2-60,8)	
switch-off	1150	0	
Idle stop	400	max. 1,5	
	350	1,0-7,0	
	300	(10,5-19,5)	
End stop	170	min. 80,0	
	250	max. 55,0	

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,4
MS	1,3-1,5
SVS	max. 6,0
A	
B	

Observations

A1

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 3,9 a
1. Edition
En -

VE 4/12 F 1250 R 123

0 460 424 006

supersedes -
company Cummins
engine 4 T.390

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/.

Pre-stroke setting 0,3 mm

Test ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	900	2,3- 2,7	mm		
1.2 Supply-pump pressure	900	4,5- 5,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1100	85,0-86,0	cm³/1000 strokes		4,0(4,5)
1.4 Idle regulation	375	18,5-24,0	cm³/1000 strokes		3,5(4,5)
1.5 Full-speed regulation	1340	24,5-32,5	cm³/1000 strokes		
1.6 Start	100	min. 97,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	750	900	1100	1250
	mm	1,1-1,9(0,8-2,2)	(1,8-3,2)	3,2-4,0(2,9-4,3)	3,7-4,5(3,4-4,8)
2.2 Supply pump	n = rev/min	400	750	1100	
	bar (kgf/cm²)	2,3-2,9	3,8-4,4	5,3-5,9	
Overflow delivery	n = rev/min	600		1250	
	cm³/10 s	55-138(40-153)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1400	max. 1,0		
	1340		(23,5-33,5)	
	1250	80,0-83,0	(78,5-84,5)	
	1100		(82,5-88,5)	
	750	88,5-92,5	(86,7-94,3)	
	600	88,5-92,5	(86,7-94,3)	
switch-off				
Idle stop	450	max. 1,5		
	375		(16,5-26,5)	
	300	40,3-46,3	(38,3-48,3)	
End stop	130	min. 97,0		
	200	max. 85,0		

2.4 Solenoid

max. cut-in voltage xx min. 10 V
test voltage xxxxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,4
MS	1,4-1,6
SVS	4,2
A	
B	

Observations

Stop check electric shutoff device at 375 min⁻¹

A2

A2

⑥ # Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 FOR 1,6 a

1. Edition

VE 4/9 F 2400 R 125
0 460 494 122

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes
company: Ford
engine: Kent Diesel

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment: see VDT-W-460/.

Pre-stroke setting mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3- 4,7	mm		
1.2 Supply-pump pressure	1500	5,3- 5,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1750	28,4-29,4	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	420	9,0-13,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2675	10,4-16,4	cm³/1000 strokes		
1.6 Start	100	min. 50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2000
	mm	1,0-1,8(0,7-2,1)	(3,8-5,2)	6,4-7,2(6,1-7,5)
2.2 Supply pump	n = rev/min	600		2000
	bar (kgf/cm²)	3,1-3,7		6,6-7,2
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2950	max. 2,0	
	2675	(9,4-17,4)	
	2550	19,5-25,5 (18,5-26,5)	
	2400	27,7-29,7 (26,4-31,0)	
	1750	(26,6-31,2)	
	1000	24,8-27,8 (23,3-29,3)	
	600	23,4-26,4 (21,9-27,9)	
switch-off	2400	0	
Idle stop	570	max. 2,5	
	475	3,3-7,3 (1,3-9,3)	
	420	(7,0-15,0)	
End stop	400	min. 30,0	
	500	max. 30,0	

2.4 Solenoid	
max. cut-in voltage	xxx min. 10 V
test voltage	xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,6-1,85
SVS	3,4
$_A$XK	23,3-25,3
^{B}XL	10,4-13,8

Observations

02.84

BOSCH

A3

⑥ Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3k
2. Edition

Ea

VE 4/9 F 2075 R 126
0 460 494 121
DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes 10.83
company Peugeot
engine XD 3 S

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection-Pump-Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

Testöl-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,8- 6,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,6- 6,2	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	500	42,8-43,8	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	54,5-55,5	cm³/1000 strokes	0,8	2,5(3,0)
1.4 Idle regulation	350	20,0-24,0	cm³/1000 strokes	0	2,0(3,0)
1.5 Full-speed regulation	2300	25,0-31,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 57,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	750	1000	1500	2000
	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2.2 Supply pump LDA=0,8 bar	n = rev/min	200	750	2000	
	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500		2075	
	cm³/10 s	55-138(40-153)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 1,0		0,8
	2300		(24,0-32,0)	0,8
	2200	38,0-44,0	(37,0-45,0)	0,8
	2000	53,0-55,0	(51,7-56,3)	0,8
	1500		(52,7-57,3)	0,8
	1000	52,0-55,0	(50,5-56,5)	0,8
	750*	48,7-49,7	(46,2-52,2)	0,25
	500		(40,3-46,3)	0
switch-off elektr.	400	0		
Idle stop	500	max. 1,0		
	400	8,0-12,0	(6,0-14,0)	
	350		(18,0-26,0)	
End stop	230	min.60		
	330	max.60		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V; rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	K1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. (46)

03.84

A4

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 1
2. Edition
En

VE 4/9 F 2400 R 136

0 460 494 130

supersedes 7.83
company VWW
engine 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,4 - 2,8	mm		
1.2 Supply-pump pressure	1500	4,3 - 4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	32,0 - 33,0	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-		cm³/1000 strokes		
1.4 Idle regulation	475	6,0 - 10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2600	11,0 - 17,0	cm³/1000 strokes		
1.6 Start	100	min. 35,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,6-1,4(0,3-1,7)	(1,9-3,3)	5,8-6,5(5,5-6,9)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,2-2,8		6,4-7,0
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2800	max. 3,0	
	2600	(10,0-18,0)	
	2400	27,3-29,3(26,0-30,6)	
	1500	(30,2-34,8)	
	600	21,5-24,5(20,0-26,0)	
switch-off elektr.	400	0	
Idle stop	475	(4,0-12,0)	
	650	max. 6,0	
	1200	max. 5,0	
End stop	400	min. 18,0	
	500	max. 23,5	

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V
xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,4
*FH	1,8-2,4
A	
B	

Observations
*operating stroke (KSB)

A5

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,7 b
1. Edition
En

VE 4/8 F 2300 R 143
0 460 484 008
DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes -
company Peugeot
engine XUD 7

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/

Pre-stroke setting mm

1. Settings

	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	3,7- 4,3	mm		
1.2 Supply-pump pressure	1250	4,3- 4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1250	28,0- 29,0	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	400	4,0- 8,0	cm³/1000 strokes		2,0(3,0)
1.5 Full-speed regulation	2400	19,0- 25,0	cm³/1000 strokes		
1.6 Start	100	min. 42,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,8-1,6(0,5-1,9)	(3,3-4,7)	7,8-8,2(7,3-8,7)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,8-3,4		6,4-7,0
Overflow delivery	n = rev/min			2300
	cm³/10 s			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0	
	2500	11,5-17,5 (10,5-18,5)	
	2400	(18,0-26,0)	
	2250	27,4-29,4 (26,1-30,7)	
	2000	28,2-30,2 (26,9-31,5	
	1250	(26,2-30,8)	
	700	28,7-31,7 (27,2-33,2)	
switch-off	2300	0	
Idle stop	450	max. 5,0	
	400	(2,0-10,0)	
End stop	250	min.44,0	
	500	max.33,0	

2.4 Solenoid — max. cut-in voltage xx min. 10 V
test voltage xxxxxxxxrated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,5
MS	1,3-1,5
SVS	max 5,0
A	
B	

Observations

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

A6

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4 l

2. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 L 144

0 460 406 029

Overflow temperature 45° C

supersedes 10.83
company: VWW
engine: 087 T

Different test specs with restriction bore 0.86 mm. See Page 2!

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,2-1,6	mm	0,75	
1.2 Supply-pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	25,5-26,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	0,75	2,5 (3,0)
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2600	10,0-16,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 42	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1500	1500	2000	2000	2400
	mm	(0,7-2,1)	(*)	3,6-4,4(3,3-4,7)	(*)	5,6-6,4(5,3-6,7)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600	1500*	2400		
	bar (kgf/cm²)	3,3-3,9	6,8-7,4	8,1-8,7		
Overflow delivery	n = rev/min	600 (0 bar)		2400 (0,75 bar)		
	cm³/10 s	55-138(40-153)		55-138(40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 4,0		0,75
	2600		(9,0-17,0)	0,75
	2400	35,0-37,0	(33,7-38,3)	0,75
	1500		(42,2-46,8)	0,75
	800**	32,5-33,5	(30,0-36,0)	0,3
	600		(23,0-29,0)	0
switch-off elektr.	400	0		
Idle stop	375		(4,0-12,0)	
	450	max. 3,0		
End stop	400	min. 20		
	500	max. 30		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V; test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max.6,0
**LDA-Hub	5,3
A	
B	

Observations

Please note instructions on sheet 2

A7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

12.83

A7

Adjustment angle = 0° = horizontal control lever position

Timing device

1500 1/min	2000 1/min	2000 1/min*	2400 1/min
0,8-1,2(0,3-1,7)	3,1-3,9(2,8-4,2)	5,8-7,0(5,7-7,1)	5,0-5,8(4,7-6,1)

Idle stop

415 1/min	6,0-10,0 (4,0-12,0)	ccm/1000 H.

Full load

2850 1/min	max. 4,0	ccm/1000 H.
2675 1/min	10,0-16,0 (9,0-17,9)	ccm/1000 H.

* Test hydr. cold-start accelerator:
At the designated points do not apply voltage to magnet of hydr. cold-start accelerator.
1500 1/min 3,0-4,0 (2,8-4,2)
2000 1/min 4,9-6,1 (4,8-6,2)

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 l 1
2. Edition
En
10.83

Testoil-ISO 4113

VE 6/10 F 2400 L 144-1 Overflow temperature 45° C
0 460 406 030
Different test specs with restriction bore 0.86 mm. See Page 2!

supersedes
company: VWW
engine: 087 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,2-1,6	mm	0,75	
1.2 Supply-pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	25,5-26,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	0,75	2,5 (3,0)
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2600	10,0-16,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 42	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1500		1500		2000		2000	2400
	mm	(0,7-2,1)		(*)		3,6-4,4(3,3-4,7)		(*)	5,6-6,4(5,3-6,7)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600		1500*		2400			
	bar (kgf/cm²)	3,3-3,9		6,8-7,4		8,1-8,7			
Overflow delivery	n = rev/min	600 (0 bar)				2400 (0,75 bar)			
	cm³/10 s	55-138(40-153)				55-138(40-153)			

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 4,0		0,75
	2600		(9,0-17,0)	0,75
	2400	35,0-37,0	(33,7-38,3)	0,75
	1500		(42,2-46,8)	0,75
	800**	32,5-33,5	(30,0-36,0)	0,3
	600		(23,0-29,0)	0
switch-off mech.	2400	0		
elektr.	400	0		
Idle stop	375		(4,0-12,0)	
	450	max. 3,0		
End stop	400	min. 20		
	500	max. 30		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max.6,0
**LDA-Hub	5,3
A	
B	

Observations

Please note instructions on sheet 2

12.83

Adjustment angle = 0° = horizontal control lever position

Timing device

1500 1/min	2000 1/min	2000 1/min*	2400 1/min
0,8-1,2(0,3-1,7)	3,1-3,9(2,8-4,2)	5,8-7,0(5,7-7,1)	5,0-5,8(4,7-6,1)

Idle stop

415 1/min	6,0-10,0 (4,0-12,0)	ccm/1000 H.

Full load

2850 1/min	max. 4,0	ccm/1000 H.
2675 1/min	10,0-16,0 (9,0-17,9)	ccm/1000 H.

* Test hydr. cold-start accelerator:
At the designated points do not apply voltage to magnet of hydr. cold-start accelerator.
1500 1/min 3,0-4,0 (2,8-4,2)
2000 1/min 4,9-6,1 (4,8-6,2)

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 3

2. Edition

E..0

VE 4/9 F 2250 R 149
0 460 494 138

supersedes 7.83
company VWW
engine 086 T

Overflow temperature 45° C

Testoil ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/.

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,8 - 4,2	mm	0,75	
1.2 Supply-pump pressure	1500	4,6 - 5,2	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	23,5 - 24,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,5 - 44,5	cm³/1000 strokes	0,75	2,5 (3,0)
1.4 Idle regulation	475	6,0 - 10,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2525	9,0 - 15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 35,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2250
LDA=0,75 bar	mm	1,8-2,6(1,5-2,9)	(3,3-4,7)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600		2250
LDA=0,75 bar	bar (kgf/cm²)	2,5-3,1		6,5-7,1
Overflow delivery	n = rev/min	600		2250 (0,75 bar)
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 3,0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,5-40,5	(37,3-41,7)	0,75
	1500		(41,8-46,2)	0,75
	1000 *	33,5-34,5	(31,8-36,2)	0,3
	600		(21,0-27,0)	0
switch-off				
elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	1200	max. 5,0		
End stop	400	min. 22,0		
	500	max. 30,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V
xxx xxxxxxxx xxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,2- 3,4
KF	5,7- 6,0
MS	1,2- 1,4
SVS	4,4
**FH	1,8- 2,4
XK	18,4-20,4
XL	8,6-12,0
A	
B	

Observations
Manifold-pressure compensator stroke = 4,0 mm
Correction at the adjusting nut. (46)
*operating stroke (KSB)

A11

03.84

AAA

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,9 b
1. Edition
En

Testoil-ISO 41-13

E 4/9 F 2300 R 162
0 460 494 153
DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450 mm / 1 680 750 073

Overflow temperature 45° C

supersedes
company Peugeot
engine XUD 9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min		Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000		7,8- 8,2	mm		
1.2 Supply-pump pressure	1250		3,9- 4,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		-	cm³/1000 strokes		
Full-load delivery without charge-air pressure *	1250		28,8-29,8	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	A	550	3,5- 4,5	cm³/1000 strokes		B 2,5(3,0)
1.5 Full-speed regulation	2400		19,3-25,3	cm³/1000 strokes		
1.6 Start	100		min. 44,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,5-1,5(0,3-1,7)	3,4-4,2(3,1-4,5)	(7,3-8,7)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,3-2,9		5,9-6,5
Overflow delivery	n = rev/min	600		2300
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0	
	2500	10,7-16,7 (9,7-17,7)	
	2400	(18,3-26,3)	
	2250	28,9-30,9 (27,6-32,2)	
	2000	29,7-31,7 (28,4-33,0)	
	1250	(27,0-31,6)	
	700	29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop	A 550	3,5- 4,5	
	B 350	8,0-12,0 (6,0-14,0)	
	C 470	8,0-12,0 (6,0-14,0)	
End stop	250	min. 40,0	
	500	max. 35,0	

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxxx rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,0
A	
B	

Observations

*Residual delivery setting Idle setting (LFG) as per VDT-I-460135

A12

A12

Test Specifications Distributor-type Fuel-injection Pumps

NPP 001/4 FIA 1,9 d
2. Edition
En

VE 4/9 F 2300 L 157
0 460 494 144
DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes 12.83
company Fiat
engine: X8/48

Overflow temperature 45° C

Test-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,4- 4,8	mm		
1.2 Supply-pump pressure	1500	5,1- 5,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	33,0-34,0	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	350	9,0-13,0	cm³/1000 strokes		2,0(3,0)
1.5 Full-speed regulation	2400	24,0-30,0	cm³/1000 strokes		
1.6 Start	100	min. 57,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	0,7-1,5(0,4-1,8)	(3,9-5,3)	8,2-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min	400		2300
	bar (kgf/cm²)	2,5-3,1		6,9-7,5
Overflow delivery	n = rev/min	400		2300
	cm³/10 s	55-138 (40-153)		55-138(40 - 153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2600	3,0- 9,0 (2,0-10,0)	
	2500	14,0-20,0 (13,0-21,0)	
	2400	(23,0-31,0)	
	2300	34,8-37,2 (32,0-40,0)	
	1500	(31,2-35,8)	
	1000	32,7-35,3 (31,0-37,0)	
	600	34,0-37,0 (32,5-38,5)	
switch-off	2300	0	
Idle stop	450	max. 1,5	
	400	0,5 - 6,5	
	350	(7,0-15,0)	
End stop	300	min. 50,0	
	450	max. 46,0	

2.4 Solenoid — max. cut-in voltage xxx min. 10 V; xxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,1-3,4
KF	5,7-6,0
MS	1,4-1,65
SVS	2,8
A	
B	

Observations

03.84

A13

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 2,7 a

1. Edition

Ea

VE 3/11F 1250 L 163-1
0 460 413 002

supersedes
company Fiat-Iveco
engine 8035.06.200

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Test oil ISO 4113

Pre-stroke setting 0,2 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	2,5 - 2,9	mm		
1.2 Supply-pump pressure	800	3,8 - 4,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	66,5 - 67,5	cm³/1000 strokes		3,5 (4,0)
1.4 Idle regulation	350	21,0 - 25,0	cm³/1000 strokes		3,5 (4,0)
1.5 Full-speed regulation	1400	12,0 - 18,0	cm³/1000 strokes		
1.6 Start	100	min. 80,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	800	1200
	mm	1,0-1,8(0,7-2,1)	(2,0-3,4)	5,9-6,7 (5,6-7,0)
2.2 Supply pump	n = rev/min	400		1200
	bar (kgf/cm²)	2,0 - 2,6		5,6 - 6,2
Overflow delivery	n = rev/min			1250
	cm³/10 s			55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	1450	max. 1,0	
	1400	(10,5-19,5)	
	1350	42,0-48,0(40,5-49,5)	
	1250	66,5-69,5(65,3-70,7)	
	800	(64,3-69,7)	
	500	56,5-59,5(54,6-61,4)	
switch-off			
Idle stop	475	max. 1,0	
	425	2,0 - 8,0(0,5 - 9,5)	
	350	(18,5 -27,5)	
End stop	150	min. 90,0	
	250	max. 55,0	

2.4 Solenoid		
	max. cut-in voltage	xxx min. 10V
	test voltage xxx	rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1 - 5,3
MS	1,5 - 1,7
SVS	4,3
A	
B	

Observations

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A14

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 3,9 a

1. Edition

En

VE 4/11 F 1250 L 164

0 460 414 013

supersedes: -
company: Fiat
engine: 8045.05.200

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/.

Testoil 460 4113

Pre-stroke setting 0,2 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,8- 4,2	mm		
1.2 Supply-pump pressure	800	3,7- 4,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	73,5-74,5	cm³/1000 strokes		3,5(4,0)
1.4 Idle regulation	350	21,0-25,0	cm³/1000 strokes		3,5(4,0)
1.5 Full-speed regulation	1350	29,0-35,0	cm³/1000 strokes		
1.6 Start	100	min. 80,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1250
	mm	1,3-2,1(1,0-2,4)	(3,3-4,7)	7,6-8,4(7,3-8,7)
2.2 Supply pump	n = rev/min	500		1250
	bar (kgf/cm²)	2,3-2,9		5,7-6,3
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1430	max. 1,0	
	1390	4,0-12,0(3,5-12,5)	
	1350	(27,5-36,5)	
	1250	69,5-72,5(68,3-73,7)	
	800	(71,3-76,7)	
	500	64,0-67,0(62,1-68,9)	
switch-off	1250	0	
Idle stop	500	max. 1,0	
	425	4,0-10,0(2,5-11,5)	
	350	(18,5-27,5)	
End stop	150	min. 90,0	
	250	max. 65,0	

2.4 Solenoid

max. cut-in voltage xxx min 10 V

idle voltage xxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,4-5,6
MS	1,5-1,7
SVS	4,3
A	
B	

Observations

A15

AAS

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 3,6 b
1 Edition
En

VE 4/11 F 1250 L 164-1
0 460 414 015

supersedes–
company Fiat
engine: 80 45.06.200

Overflow temperature 45° C

Testoil ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	1,9- 2,3	mm		
1.2 Supply-pump pressure	800	3,7- 4,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	67,0-68,0	cm³/1000 strokes		3,5(4,0)
1.4 Idle regulation	350	23,0-27,0	cm³/1000 strokes		3,5(4,0)
1.5 Full-speed regulation	1350	29,0-35,0	cm³/1000 strokes		
1.6 Start	100	min. 90,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	800	1100	1250
	mm	0,2-0,8(0,0-1,2)	(1,4-2,8)	4,9-5,5(4,5-5,9)	5,3-6,1(5,0-6,4)
2.2 Supply pump	n = rev/min	600		1250	
	bar (kgf/cm²)	2,9-3,5		6,0-6,6	
Overflow delivery	n = rev/min	300		1250	
	cm³/10 s	55-138(40-153)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1410	max. 3,0	
	1380	11,0-19,0(10,5-19,5)	
	1350	(27,5-36,5)	
	1250	59,5-62,5(58,3-63,7)	
	800	(64,8-70,2)	
	500	59,0-62,0(57,1-63,9)	
switch-off	1250	0	
Idle stop	480	max. 2,5	
	425	4,0-10,0(2,5-11,5)	
	350	(20,5-29,5)	
End stop	150	min.90,0	
	250	max.60,0	

2.4 Solenoid — max. cut-in voltage xx min. 10 V; test voltage xxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,4
MS	1,5-1,7
SVS	4,3
A	
B	

Observations

03.84

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 2.2 b

1. Edition

En

VE 4/10 F 2100 L 168

0 460 404 038

supersedes

company: VM Motori

engine: HR 492 HT

Overflow temperature 45° C

Test Instructions and Test Equipment see VDT-W-460/

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	4,5 - 4,9	mm	0,8	
1.2 Supply-pump pressure	1600	5,6 - 6,2	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1600	59,0 - 60,0	cm³/1000 strokes	0,8	3,0(3,5)
Full-load delivery without charge-air pressure	600	41,5 - 42,5	cm³/1000 strokes	0	
1.4 Idle regulation	400	16,0 - 20,0	cm³/1000 strokes	0	2,5(3,5)
1.5 Full-speed regulation	2300	27,0 - 33,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 55,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	1000	1600	2100
	mm	0,9-1,7(0,6-2,0)	(4,0-5,4)	7,0-7,8(6,7-8,1)
2.2 Supply pump LDA=0,8 bar	n = rev/min	400		2100
	bar (kgf/cm²)	1,5-2,1		7,2-7,8
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2400	max. 3,0	0,8
	2380	11,0-18,0(10,0-19,0)	0,8
	2300	(25,5-34,5)	0,8
	2100	51,8-54,2(48,5-57,5)	0,8
	1600	37,5-40,5(36,3-41,7)	0
	1600	(56,8-62,2)	0,8
	*700	50,0-51,0(47,1-53,9)	0,4
	600	(38,6-45,4)	0
switch-off	2100	0	
Idle stop	600	max. 1,0	
	450	3,5-9,5(2,0-11,0)	
	400	(13,5-22,5)	
End stop	400	min. 52,0	
	500	max. 46,0	

2.4 Solenoid: max. cut-in voltage xx min 10 V; xxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	0,7-0,9
SVS	3,6
A	
B	

Observations

Manifold-pressure compensator stroke = 6,1 mm

Correction at the adjusting nut. (46)

Test oil ISO 4113

A17

A17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,7 a

1. Edition

En

Testoil-ISO 4113

VE 4/8 F 2300 R 171
0 460 484 010
DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450 mm / 1 680 750 073

Overflow temperature 45° C

supersedes -
company: Peugeot
engine: XUD 7

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460V..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	3,8- 4,2	mm		
1.2 Supply-pump pressure	1250	4,3- 4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1250	29,5-30,5	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation *	A 550	3,5- 4,5	cm³/1000 strokes		B 2,0(3,0)
1.5 Full-speed regulation	2400	19,0-25,0	cm³/1000 strokes		
1.6 Start	100	min. 42,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,8-1,6(0,5-1,9)	(5,3-4,7)	8,0-8,8(7,7-9,1)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,8-3,4		6,4-7,0
Overflow delivery	n = rev/min			2300
	cm³/10 s			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0	
	2500	11,5-17,5 (10,5-18,5)	
	2400	(18,0-26,0)	
	2250	28,0-30,0 (26,7-31,3)	
	2000	29,0-31,0 (27,7-32,3)	
	1250	(27,7-32,3)	
	700	29,5-32,5 (28,0-34,0=	
switch-off	2300	0	
Idle stop	A 550	3,5 - 4,5	
	B 350	8,0 -12,0 (6,0-14,0)	
	C 470	8,0 -12,0 (6,0-14,0)	
End stop	250	min. 44,0	
	500	max. 34,0	

2.4 Solenoid

max. cut-in voltage xx min 10 V

test voltage ~~xxxxxxxxx~~ rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,5
MS	1,3-1,5
SVS	max. 3,0
A	
B	

Observations

*Residual delivery setting Idle setting (LFG) as per VDT-I-460135

A18

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

A18

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MAN 9,7 1 4
1. Edition
En

PES 6 A 95 D 410 RS 2108 RSV 200-750 A 7 B 607 L
Komb.-Nr. 0 400 876 166

supersedes
company MAN
engine

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	10,8+0,1	10,4-10,6	0,3(0,6)			
200	6,0-6,2	0,9- 1,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	200	6,1	750	10,8-10,9
	x = 5,25						100	min.19,5	400	10,8-11,0
ca. 49 (2a)	9,8	790-800					200	6,0-6,2	250	11,9-12,5
	4,0	810-840					220-280	= 2,0		
	9 5	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
750	103,5-105,5 (101,5-107,5)	790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 15,8 k 1 — 1. Edition — **40**

En

PE 10 A 85 D 610/4 LS 2243 RQV 300-1150 AB 1040 DL
Komb.-Nr. 0 400 649 206
1-10-9- 4- 3 - 6 - 5 - 8 - 7 - 2
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes -
company KHD
engine F 10 L 413
174 kW (238 PS) / 2300 min-1
Combine harvester

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,1+0,1	7,6-7,7	0,3(0,45)			
300	7,3-7,5	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.12	100	min.7,5	250	0,7-1,1
ca.64	9,1	1190-1200					300	5,9-6,1	550	2,6-2,8
	4,0	1240-1270					590-	650=2,0	850	4,4-4,7
	1400	0-1,0				355-465	750	max.1,0	1150	7,5
						(3a)				

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1150	76,0-77,0 (74,0-79,0)	1190-1200*	1000	82,0-85,0 (80,0-87,0)	100	14,1-15,1 mm RW	1150	10,1+0,1
			900	81,0-84,0 (79,0-86,0)			975	10,3+0,2
							925	10,7+0,2
							500	11,0+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

2 84

A20

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 q 7
1. Edition
En

PES 6 A 90 D 410 RS 2293 Z RSV 350-1300 A 0 B 1101 DL
1101-2L

Komb.-Nr. 0 400 876 257

Supersedes
Company Daimler-Benz
Engine OM 352
70 kW (95 PS)
Unimog

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	8,2-8,3	4,5 - 4,6	0,3(0,45)			
350	7,0-7,2	1,0 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		350	7,1	1300	8,2-8,3
	x = 5,0								500	9,6-9,7
							100	min.19,0	700	9,3-9,5
ca.66	7,2	1340-1350					350	7,0-7,2	1100	8,5-8,8
	4,0	1395-1425					465-525	= 2,0		
(2a)	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	44,5-45,5 (42,5-47,5)	1340-1350*	500	42,0-45,0 (40,0-47,0)	100	78,0-88,0 (75,0-91,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

A21

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 FAL 7,4 a
1. Edition
En

BR-PES6A 90 C 410 RS 2361
BR-PES6A 90 D 410 RS 2361

EP/RSV 250-1150 A1B 1015 L

supersedes
company Fiat-Allis
engine CP3/720

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 000	9,0	5,9-6,4	0,4			
1 000	6,0	2,7-3,5				
1 000	15,0	13,3-14,3				
200	9	0,2-0,3				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 66	1 150	16,0		ca. 27	250	6,0	1 130	0
	1 210	10,4			100	19,0-21,0	450	0
	1 250	5,7	without auxiliary spring		250	5,7- 6,3	300	1,2-1,8
	1 220	7,8-11,0			330	4,2- 5,0		
	1 250	4,0- 7,3	with auxiliary spring		400	2,0- 3,9		
(2a)	1 300	0,8- 3,0			600	0 - 1,0		
	1 400	0,3- 1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1 130	78,0-80,0	1170-1190*	-	-	100	min. 129,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.84

A22

A22

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6,1 e
7. Edition
En

PES 6 A 95 D 410 RS 2471 RSV 325-1150 A 8 B 707 DL

Komb.-Nr. 0 400 876 274

supersedes 6.83
company KHD
engine BF6L 913 C
132 kW
Einbau 2300

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8+0,1	10,8-11,0	0,3(0,6)			
325	7,1-7,3	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 21	325	6,7	1150	11,8-11,9
	x	= 4,75					100	min.19,0	500	11,8-12,0
ca. 55	10,8	1190-1200					325	7,1-7,3		
(2a)	4,0	1235-1265					590-650	= 2,0		
	1400	0,3-1,7								

The numbers dencte the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 108,0-110,0 (106,0-112,0)	1190-1200*	LDA 850	0,7 bar 102,5-105,5 (100,0-108,0)	100	125,0-135,0 (122,0-138,0) = 15,5 - 15,8 mmRW	0 -	-
			LDA 500	0 bar 62,0-64,0 (59,5-66,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

A23

D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 e

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2471 + RSV..A 8 B707DL	0,70		11,8-11,9
		0,37	11,5-11,6
		0,09	10,1-10,3
		0	9,9-10,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A24

A24 En

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 11,1 h

4. Edition

En

Testoil-ISO 4113

PES 6 A 95 D 410 LS2485 RQV 250-1100 AB850D (1)
LS2485Z RQV 250-1100 AB850D (2)
LS2485 RQV 750 AB955 (3)

supersedes
company M A N
engine D 2566 M..
(1 - 240 PS)
(2 - 220PS-Saviem)
(3 - Aggregat)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2485 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 2485Z cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,3 - 12,5	0,3(0,6)	11,0+0,1	11,2 - 11,4	
250	5,9-6,1	1,1 - 1,7	0,3(0,5)	5,6-5,8	0,9 - 1,5	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

2485 mit 850D (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	Sliding sleeve travel Torque-control travel: rev/min 10	mm 11
ca.50	1140	14,4-17,6	-	-	-	ca.13	100	7,5-10,2	200	0,5-2,2
	1200	4,0-10,6					200	5,7-8,5	600	3,8-4,1
	1220	0 - 8					300	2,5-5,3	1140	8,3
	1300	0 - 1					410	0	1140	0
									550	0,4-0,6

Torque control travel a - 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation rev/min 3	Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point: rev/min 6	cm³/1000 strokes 7	Intermediate rotational speed Torque-control travel: rev/min 8	mm
1100 (1)	123,0-125,0 (121,0-127,0)	1140-1150 *	500	113,5-118,5 (111,5-120,5)	100	108,5-116,5 - 12,6-13,0 mm RW	-	-
					250	6,0 mm RW		
					130-190(120-200)			./.

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

3.84

B1

B. Governor Settings

2485 Z + RQV..850 D

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2a)	Upper rated speed: Control rod travel mm rev/min (1a)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min	Intermediate rated speed: Control rod travel mm	Lower rated speed: Degree of deflection of control lever (3a)	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	Sliding sleeve travel (1): mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	14,4-17,6	-	-	-	ca.13	100	min. 7,4	200	0,7-0,9
ca.42	10,0	1140-1150					250	5,6-5,8	500	3,5-3,8
	4,0	1175-1205					310-370	=2,0	800	4,9-5,4
	1300	0-1,0					450	max.1,0	1100	7,7

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp 40°C (104°F) (2): rev/min	Full-load delivery: cm³/1000 strokes	Rotational-speed limitation, intermediate speed (2b) (4a): rev/min	Fuel delivery characteristics, high idle speed (5a) (5b): rev/min	Fuel delivery characteristics, high idle speed: cm³/1000 strokes	Starting fuel delivery, idle switching point (6): rev/min	Starting fuel delivery, idle switching point: cm³/1000 strokes	Torque-control travel (5): rev/min	Torque-control travel: Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	111,5-113,5	1140-1150*	800	114,5-118,5	100	13,7-14,3	1100	11,0+0,1
(2)	(109,5-115,5)			(112,5-120,5)		mm RW	800	11,4+0,2
			500	111,5-113,5			500	11,5+0,1
				(109,5-115,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

2485 + RQV..955

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2a)	Upper rated speed: Control rod travel mm rev/min (1a)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min	Intermediate rated speed: Control rod travel mm	Lower rated speed: Degree of deflection of control lever (3a)	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	Sliding sleeve travel (1): mm
1	2	3	4	5	6	7	8	9	10	11
ca. 29	725	16.0-22,0	-	-	-	-	-	-	750	4,6
	750	9,3-13,8								
	770	2,5-11,0								
	800	0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp 40°C (104°F) (2): rev/min	Full-load delivery: cm³/1000 strokes	Rotational-speed limitation, intermediate speed (2b) (4a): rev/min	Fuel delivery characteristics, high idle speed (5a) (5b): rev/min	Fuel delivery characteristics, high idle speed: cm³/1000 strokes	Starting fuel delivery, idle switching point (6): rev/min	Starting fuel delivery, idle switching point:	Torque-control travel (5): rev/min	Torque-control travel: Control rod travel mm
1	2	3	4	5	6	7	8	9
725	122,5-124,5	765-770*	-	-	-	-	-	-
(3)	(120,5-126,5)				200	7,0-11,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 g
3. Edition

En

PES 6 A 95 D 410 LS 2485 RQ 250/1100 AB 965 DL

Komb.-Nr. 0 400 846 372

supersedes 11.82
company: MAN
engine: D 2566 M/MF

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 -1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,3-12,5	0,3(0,6)			
250	6,0-6,2	1,1- 1,7	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,7 4,0	1145-1160 1185-1215	250	6,1	100 150 360-420 500	min. 7,5 6,0 -6,2 =2,0 max. 1,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	123,0-125,0 (121,0-127,0)	-	500	113,5-118,5 (111,5-120,5)	100	108,5-116,5 (105,5-119,5) ≙ 12,6-13,0 mm RW

Checking values in brackets

3.84

B3

B3

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 KHD 4,1 c 1

1. Edition

En

PES 4 A 80 D 410/3 RS 2523 RSV 325-1400 A 8 B 540DL

Komb.-Nr. 0 400 864 044

supersedes

company KHD

engine F 4 L 912 Einbau 2800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,2+0,1	5,7-5,8	0,2(0,35)			
325	8,0-8,2	0,9-1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 X=	0,3-1,0	-	-	-	ca.19	325	7,6	1380	10,2-10,3
							100	min.19,5	900	10,8-11,1
ca.67	9,2	1420-1430					325	8,0-8,2	500	11,4-11,5
(2a)	4,0	1450-1480					670 - 730	=2,0		
	1600	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1380	57,0-58,0 (55,5-59,5)	1420-1430*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B4

B4

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 6,1 d
2. Edition
En

Testoil-ISO 4113

PES 6 A 80 D410/3 RS2527 EP/RSV 325-1150 A8 B2014DL

Komb.-Nr. 0 400 866 084

supersedes 1.78
company
engine K H D
F6 L912
75kW (102PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2527 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8 +0,1	5,6 - 5,7	0,2(0,35)			
325	8,9-9,1	0,8 - 1,2	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 23	325	8,5	1150	11,8+0,1
							100	min. 19,5	950	12,0+0,2
							325	8,9-9,1	775	12,5+0,2
ca. 58 (5)	10,8	1190-1200					390-450	0 = 2,0	450	12,5+0,2
	4,0	1235-1265								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1150	56,0 - 57,0 (54,5 - 58,5)	1190-1200 *	775	54,0 - 56,0 (52,0 - 58,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

B5

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

B5

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 d 1
1. Edition

En

PES6A 85D 410 RS 2537 RSV 325-1150 A8B2020 DL
Komb.-Nr. 0 400 876 270 A8C2020 DL

supersedes -
company KHD
engine BF 6 L 913
97 kW/2300 min^{-1} (1)
Schlepper DX145-S15
107kW/2300 min^{-1} (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (1,9 - 2,0 / 1,85 - 2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	8,0-8,2	0,3(0,45)			
325	6,8-7,0	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.21	325	5,0		
							100	min.19,5		
ca.55	10,0	1190-1200					325	5,4- 5,6		
(2a)	4,0	1225-1255					510-570	= 2,0		
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery charactenstics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
(1)	LDA 1150	0,7 bar 77,0-78,0 (75,0-80,0)	1190-1200*	LDA 650	0,3 bar 77,0-79,0 (74,5-81,5)	100	120,0-130,0	-	-
	LDA 800	0,5 bar 78,0-81,0 (75,5-82,5)		LDA 500	0 bar 61,0-63,0 (58,5-65,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

2.84

B6

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B. Governor Settings

(1A)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.21	325	4,9-5,1	1150	11,0+0,1
							100	min.19,5	750	12,4+0,2
							325	5,4-5,6	450	12,5+0,2
ca.55	10,0	1190-1200					510-570	=2,0		
(5)	4,0	1225-1255					700	0 - 1		
	1350	0,3-1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitation	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to .)						Control rod travel
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
(2) LDA	0,7 bar		LDA	0,7 bar				
1150	79,5 - 81,5	1190-1200*	800	88,0 - 91,0	100	120,0-130,0	-	-
	(77,5 - 83,5)			(86,0 - 93,0)		(117,0-133,0)		
						= 17,4-18,0		
			(6a) LDA	0 bar		mm RW		
				60,0 - 63,0				
				(58,0 - 65,0)				

Checking values in brackets

*1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing ~~increasing~~ pressure – in bar gauge pressure (g.p.)

Pump/governor	Setting (g.p.) bar	Measurement (g.p.) bar	Control rod travel ~~XXXXXX~~ diminution ~~XXXXXX~~ difference mm (1)
2537 mit 2020DL	0,70	0,37	12,6 - 12,8
		0,09	12,2 - 12,3
		0	10,6 - 10,9
			10,6 - 10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B7

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 HAN 10,8 f 1

1. Edition

En

PE 4 A 95 D 420 RS 2556 RSV 350-1100 A 8 B 1120 R
Komb.-Nr. 0 400 674 042 A 8 C 1120 R

superseded
company MF-Hanomag
engine D 943

1-2-4-3 je 90 ° ± 0,5 ° (± 0,75 °)
** Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min	Control rod travel mm (2)	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1100	10,0+0,1	9,3-9,5	0,3 (0,6)			
400	7,9-8,1	1,4-2,0	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 0,3-1,0		-	-	-	ca. 21	400	7,5	1100	10,0-10,1
	x = 3,75						100	min. 19,0	1005	10,4-10,6
ca.52	9,0	1140-1150					400	7,9-8,1	500	10,9-11,0
(2a)	4,0	1205-1235					580-640	=2,0		
	1345	0,3-1,7					600	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	93,0-95,0 (91,0-97,0)	1140-1150*	700	100,0-103,0 (98,0-105,0)	100	19,0-21,0 mm RW	-	-
			500	92,0-94,0 (90,0-96,0)		**		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 HAN 10,8 f 2
1. Edition
En

PE 4 A 95 D 420 RS 2556 EP/RSV 350-1100 A 8 B 1121 DR supersedes -
Komb.-Nr. 0 400 674 043 company MF-Hanomag
engine D 943

1-2-4-3 je 90 ° ± 0,5 ° (± 0.75 °)
** Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,8-1,9 (1,75-1,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2a) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,9+0,1	8,8-9,0	0,3 (0,6)			
350	6,7-6,9	1,4-2,0	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 21	350	5,5	1100	9,9-10,0
	x = 4,5						100	min. 19,0	1010	10,3-10,5
							350	5,9-6,1	500	10,8-10,9
ca.52	8,9	1140-1150					480-540	= 2,0		
(2a)	4,0	1160-1190					600	max. 1,0		
	1340	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	87,5-89,5 (85,5-91,5)	1140-1150*	700	91,5-94,5 (89,5-96,5)	100	19,0-21,0 mm RW **	-	-
			500	83,0-85,0 (81,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B9

69

PES 6 A 95 D 410 RS 2679 RQ 200/1100 AB 860 DL

Komb.-Nr. 0 400 846 529

supersedes –

company: Daewoo

engine: D 2156 MT 169 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC) RW = 19,5-21,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,5+0,1	12,7-12,9	0,35 (0,6)			
200	5,9-6,1	1,2-1,8	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VA =	19,2-20,8 max. 46 °	600	20,0	9,5 4,0	1145-1160 1180-1210	200	6,0	100 200 310-350	min. 7,3 5,9-6,1 = 2,0	1100 600 1025	10,5-10,6 10,7-10,8 10,6-10,8

Torque-control travel on flyweight assembly dimension a = 0,1 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1100	0,7 bar 127,0-129,0 (125,0-131,0)	200	LDA 800	0,7 bar 130,5-133,5 (128,0-136,0)	100	179,0-189,0 (176,0-192,0) = 16,2-16,8 mm RW
			LDA 500	0 bar 81,5-83,5 (79,5-85,5)		

Checking values in brackets

2.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS2679 + RQ.. AB 860DL	0,70	0 0,29 0,24	10,8-10,9 8,8-9,0 10,1-10,2 9,2-9,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B11

B11

En

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 HAN 10,8 f

6. Edition

En

PE 6 A 100 D 320 RS 3030 EP/RSV 350-1100 A 8 B 1119 DR superseded 6.82
Komb.-Nr. 0 401 076 006

company MF-Hanomag
engine D 963 A 2

** Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,8-1,9 (1,75-1,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5+0,1	15,0-15,2	0,3 (0,6)			
350	6,4-6,6	1,3-1,9	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	350	5,5	-	-
	x =	5,5					100	min.19,0		
ca.56	10,5	1140-1150					350	5,9-6,1		
	4,0	1210-1240					435-495	= 2,0		
(2a)	1355	0,3-1,7					600	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	150,0-152,0 (148,0-154,0)	1140-1150*	-	-	100	19,0-21,0 mm RW **	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

12.83

B12

312

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

6. Edition En

supersedes 9.82

company: RVI

engine: MIDR06.02-12
125 kW (170 PS)

Testoil-ISO 4113

PES 6 MW 100/320 RS 1016
RQV 300 - 1400 MW 25-1
Komb. 0 403 446 122

1 - 5 - 3 - 6 - 2 - 4 je 60° * Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm

*
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,15-9,35	0,35(0,6)			
300	6,2-6,3	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5 (0,7)			
500	9,7-9,8		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1400 1700	15,2-17,8 0 - 1,0				ca. 12	200 300	min. 7,5 5,8-5,9		
ca. 62	10,1 4,0	1455-1465 1575-1605				③a		490-550 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 91,5-93,5 (89,5-95,5)	1455-1465*	LDA 900 LDA 500	0,5 bar 87,5-91,5 (85,5-93,5) 0 bar 56,0-58,0 (53,5-60,5)	100 300 100-230	94,0-104,0 9,5-13,5 (7,0-16,0) (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col 2

1.84

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

BA3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PS 1016 with	0,23		10,7 - 10,9
MW 25-1		0,5	11,1 - 11,2
		0,20	10,2 - 10,3
		0	9,7 - 9,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 RVI 8,8 f
3. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1016
0 403 446 129

ROV 300-1400 MW 25-2

supersedes 10.83
company RVI
engine MIDR 06.02-12
125 kW (170 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300
+

* Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1 - 9,3	0,35(0,6)			
300	5,8-5,9	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5 (0,7)			
500	9,3+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1400 1700	15,2-17,8 0 - 1,0	-	-	-	ca.13 (3a)	300 200	5,8-5,9 max. 7,5		
ca.62	10,1 4,0	1455-1465 1575-1605					490-550	= 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 91,0-93,0 (89,0-95,0)	1455-1465*	LDA 900 LDA 500	0,5 bar 86,0-90,0 84,0-92,0 0 bar 52,0-54,0 50,0-56,0	100 300 100-230	94,0-104,0 (91,0-107,0) 9,5-13,5 (7,0-16,0) (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.84

B15

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

B15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure bar	Measurement Gauge pressure bar	Control rod travel- diminution / difference mm (1)
PS 1016 with	0,12		9,9 - 10,0
RQV..MW 25 - 2		0,16	10,7 - 10,8
		0	9,4 - 9,5
		0,5	11,1 -11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A)

40

WPP 001/4 BET 12,8 b

1. Edition

En

PE 6 P 90/320 RS 136 EP/RSV 250-1100 P 1/338 R

supersedes -

company Berliet

engine M 635-40-C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	9,3 - 10,0	0,8			
600	9,0	3,2 - 4,4				
600	12,0	7,6 - 8,8				
600	15,0	12,8 - 14,3				
200	9,0	1,4 - 2,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.60	1100	16,0	without auxiliary spring	ca.26	250	8,5	750	0
	1150	11,4			100	19,0-21,0	400	0
	1180	7,4			250	8,2- 8,8	280	1,2-1,8
	1150	10,0-12,0	with auxiliary spring		400	1,8- 4,4		
(2a)	1220	3,5- 5,9			560	0 - 1,0		
	1340	0 - 1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	117,0-119,0	1120	-	-	100	mind.18,5 mm RW	250	20,0-26,0
		1160: 1 - 3 mm RW less than column 2			High idle 1200	speed max. 38,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.84

B17

Test Specifications Fuel Injection Pumps and Governors

VDT-WWP 001/4 BET 12.8 c
1. Edition
En

40

PES 8 P 110/321 RS 193 RQV 250-1250 PA 133 R

supersedes –
company Berliet
engine V 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4 -2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	11,5-12,1	0,4			
600	9,0	4,7- 6,1				
600	12,0	10,8-12,4				
600	15,0	20,3-22,5				
200	9,0	4,9- 6,5				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.68	1275	12,5-13,5	-	-	-	ca.12	180	7,4-8,0	1200	7,6
	1340	5,5-10,5					300	3,8-4,8		
	1400	0- 5,2					500	2,2-3,7		
	1460	0				(3a)	800	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
750	91,0-94,0	1270 1290:0,5-1,5 mm RW less than column 2	-	-	100	180,0-210,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.84

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test Specifications Fuel Injection Pumps and Governors

(1A)

40

WPP 001/4 BET 12,8 a

1. Edition

En

PE 6 P 90 A 320 RS 225 EP/RSV 250-1100 P 1/338 R

supersedes -

company Berliet

engine M 635-40-E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	9,4-9,9	0,8			
600	9,0	3,2-4,4				
600	12,0	8,3-9,5				
600	15,0	13,5-15,0				
200	9,0	2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.60	1100	16,0	without auxiliary spring	ca.26	250	8,5	750	0
	1150	11,4			100	19,0-21,0	400	0
	1180	7,4			250	8,2- 8,8	280	1,2-1,8
(2a)	1150	10,0-12,0	with auxiliary spring		400	1,8- 4,4		
	1220	3,5- 5,9			560	0- 1,0		
	1340	0- 1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	122,0-124,0	1120	-	-	100	mind.18,5 mm RW	250	20,0-26,0
		1160: 1-3 mm RW						
		less than column 2			1200	High idle max.38,0	speed	

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 BET 12,8 a 1
1. Edition
En

PE 6 P 90 A 320 RS 225 Z EP/RSV 250-1100 P1/338 R

supersedes -
company Berliet
engine M 635-40-C

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	9,3 - 10,0	0,8			
600	9,0	3,2 - 4,4				
600	12,0	7,6 - 8,8				
600	15,0	12,8 - 14,3				
200	9,0	1,4 - 2,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.60	1100	16,0	- - -	ca.26	250	8,5	750	0
	1150	11,4	without auxiliary				400	0
	1180	7,4	spring		100	19,0-21,0	280	1,2-1,8
					250	8,2-8,8		
	1150	10,0-12,0			400	1,8-4,4		
(2a)	1220	3,5- 5,9	with auxiliary		560	0- 1,0		
	1340	0- 1,0	spring					

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	117,0-119,0	1120 1160:1-3 mm RW less than column 2	-	-	100 High 1200	mind.18,5 mm RW idle speed max. 38.0	250	20,0-26,0

Checking values in brackets

* 1 mm less control rod travel than col 2

2.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 ALO 13,8 e

1. Edition

En

PE 6 P 120 A 420 LS 314 RQV 300-875 PA 313 KR

Komb.-Nr. 0 401 846 348

supersedes

company Allis Chalmers

engine 25000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
875	8,2-8,3	16,1-16,3	0,5			
300	4,9-5,1	1,8-2,4	1,0			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 66	875 900 950 990 1060	15,0-17,7 12,2-15,6 6,0-11,1 0-7,0 0	-	-	-	ca. 10	100 250 300 400 490 550	6,6-8,0 3,8-6,0 2,2-4,6 1,2-2,5 0-1,2 0	-	-

Torque control travel a = 0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
875	161,0-163,0 (159,0-165,0)	915-925*	600	146,0-150,0 (144,0-152,0)	100 300	130,0-170,0 18,0-24,0	875 600	8,2-8,3 8,4-8,5

Checking values in brackets

* 1 mm less control rod travel than col 2

12.83

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

B21

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 VOL 7,0 e
7. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 367 RQV 250-1200 PA394/2R (1) supersedes 7.83
RS 367Z PA394/2R (2) company Volvo
RS 367Y PA394/2R (3) engine TD 70 F
(1-174kW-237PS)
(2-155kW-210PS)
(3-180kW-245PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	12,2 - 12,4	0,4(0,8)	10,9+0,1	10,0 - 10,2	2,5± 0,1** (max.2,2-2,9)
250	4,7-4,8	1,1 - 1,5	0,3(0,6)	4,7-4,8	1,1 - 1,5	

Adjust the fuel delivery from each outlet according to the values in [ ]

** In case valve-spring spread is higher, change the initial tension accordingly.

B. Governor Settings (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.11 (3a)	100	min.6,2	200	0,3-1,2
							250	4,7-4,9		
ca.66	10,9	1260-1270					350-450	=2,0	1230	8,2
	4,0	1370-1400								
	1500	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
(1) 700	LDA 0,7 bar 122,0-124,0 (119,0-127,0)	1260-1270*	LDA 700	0 bar 78,5 - 80,5 (75,5 - 83,5)	100	160 - 200 (156-204)	-	-
					250	11-15)** Streug.max.3		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.84

B22

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
© by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

B22

B. Governor Settings

Upper rated speed: Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Lower rated speed: Degree of deflection of control lever	rev/min	Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca.12	100	min.6,5	200	0,3-1,2
							250	4,7-4,8		
									1230	8,2
ca.67	9,9	1265-1275								
	4,0	1360-1385								
	1450	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min	cm³/1000 strokes	Rotational-speed limitation (2b) intermediate speed (4a): rev/min	Fuel delivery characteristics high idle speed (5a) (5b): rev/min	cm³/1000 strokes	Starting fuel delivery idle switching point (6): rev/min	cm³/1000 strokes	Torque-control travel (5): rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
700	LDA 0,7 bar		LDA	0 bar	100	165,0-200,0 = 20,0-21,0 mm RW	-	-
	100,0-102,0	1265-1275*	700	78,5 - 80,5	250	11 - 15)**		
	(97,0-105,0)			(75,5 - 83,5)	Streuug. max. 3			

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

367Y (3)

Upper rated speed: Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Lower rated speed: Degree of deflection of control lever	rev/min	Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1200	15,2-17,8				ca.12	100	min. 6,3		
	1450	0-1					250	4,7-4,8		
ca.68	11,3	1240-1250								
	4,0	1355-1390				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min	cm³/1000 strokes	Rotational-speed limitation (2b) intermediate speed (4a): rev/min	Fuel delivery characteristics high idle speed (5a) (5b): rev/min	cm³/1000 strokes	Starting fuel delivery idle switching point (6): rev/min		Torque-control travel (5): rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7		LDA	0 bar				
700	129,0-131,0	1240-1250*	700	78,5 - 80,5	100	165,0-200,0		
	(126,0-134,0)			(75,5 - 83,5)	250	11-15**		
					Streuug. max. 3			

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing XXXXXXXX pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel mm (1)
367 + 394/2R	o,48	0,27	11,5 - 11,6 10,3 - 10,5
367Z + 394/2R	0,36	0,23	10,6 - 10,7 9,9 - 10,1
367Y + 394/2R	0,53	o,26	11,8 - 11,9 10,3 - 10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 11,6 k 2
3. Edition

En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P5/458 R
See Service Information VDT-I-420/114/
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.83
company DAF
engine DKX 1160
243 kW
Komb.-Nr. 0 401 876 261

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil 130 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,3-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,0	400	11,6-11,7
	x = 5,0								300	11,8-12,3
							250	6,4-6,6
ca. 54 (2a)	10,4	1140-1150					670-730	= 2,0		
	4,0	1270-1300								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 183,0-186,0 (180,0-189,0)	1140-1150*	LDA 600	0 bar 135,0-138,0 (132,0-141,0)	100	315,0-355,0 (311,0-359,0) = 19,5-21,0 mm RW	250	6,5

Checking values in brackets

* 1 mm less control rod travel than col 2

2.84

C1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting		Measurement		Control rod travel - diminution difference	
	Gauge pressure =	bar	Gauge pressure =	bar	mm	(1)
PE 6 P..RS 372-1y + ..P5/458 R	0,37		0,70		11,0-11,1	
			0		11,4-11,5	
			0,30		10,0-10,1	
					10,3-10,7	

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C2

C2
En

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11.1 q 2
2. Edition
En

Testoil-ISO 4113

PES 6 P 110 A 720 LS 375 RQ 250/1100 PA432DR (1)
.. LS375Z RQV 250-1100 PA373DR (2)
Komb.-Nr. 0 402 046 176 (1)
0 402 046 185 (2)

supersedes 9.78
company M A N
engine D2566 MTSF/MTSFV
(192kW - 260 PS)
(1 - Nr. 7985)
(2 - Nr. 7024)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7 +0,1	13,6 - 13,8	0,4(0,8)			
250	6,8-7,0	0,9 - 1,5	0,4(0,7)			
700/500	- - -	C, Sp. 4 u. 5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

RQ.. 432DR (1)

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm ±0,1 12
600	10,2-20,8	600	20,0	10,7	1145-1160	250	7,0	100	min.8,5	1100	11,8
		VH ca.	19	4,0	1200-1230			250	6,9-7,1	700	11,8
1100	Breakway							370-	410= 2,0		
1350	0,1 - 1										

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation. At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar		LDA	0,18 bar		
1100	136,0 - 138,0 (133,0 - 141,0)		500	123,0 - 127,0 (120,0 - 130,0)	100	215,0 - 235,0
700	133,0 - 137,0 (130,0 - 140,0)		LDA 500	0 bar 113,0 - 116,0 (110,0 - 119,0)		

Checking values in brackets

2.84

C3

B. Governor Settings

Upper rated speed: Degree of deflection of control lever (1)	rev/min Control rod travel mm (2)	Control rod travel mm rev/min (1a) (2a) (3)	Intermediate rated speed: Degree of deflection of control lever (4)	rev/min (5)	Control rod travel mm (6)	Lower rated speed: Degree of deflection of control lever (7) (3a)	rev/min (8)	Control rod travel mm (9)	Sliding sleeve travel (1): rev/min (10)	mm (11)
max.	1100	15,2-17,8	-	-	-	ca.16	100	min.8,5	250	0,9-1,1
							250	6,9-7,1	500	3,8-4,0
ca. 68	10,7	1140-1150					520-580=	2,0	800	5,4-5,5
	4,0	1245-1275							1150	8,3
	1400	0 - 1,0								

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min (1)	cm³/1000 strokes (2)	Rotational-speed limitation intermediate speed (2b) (4a): rev/min (3)	Fuel delivery characteristics high idle speed (5a) (5b): rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery idle switching point (6): rev/min (6)	cm³/1000 strokes (7)	Torque-control travel (5): rev/min (8)	Control rod travel mm (9)
LDA 1100	0,7 bar 136,0-138,0 (133,5-140,5)	1140-1150 *	LDA 500	0,18 bar 123,0-127,0 (120,0-130,0)	100	215,0-235,0 (211,0-239,0)	1100	11,7+0,1
700	133,0-137,0 (130,0-140,0)		LDA 500	0 bar 113,0-116,0 (110,0-119,0)			700	11,7+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing ~~increasing~~ pressure - in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel-diminution difference mm
375 mit 432DR 3752 mit 373DR	0,70	0,18 0,12 0	11,7 - 11,8 11,5 - 11,6 11,2 - 11,4 11,0 - 11,1

En

C4

C4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1v3
2. Edition
En

Testoil-ISO 4113

PES 6 P 110 A 720 LS 375 RQV 250-1100 PA 579
Komb.-Nr. 0 402 046 220

supersedes 5.81
company: MAN
engine: D 2566 MTE
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) RW = 9,0-12,0 mm; Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,8	16,0 - 16,2	0,4(0,8)			
	+ 0,1					
250	6,9-7,1	1,1 - 1,7	0,4(0,7)			
1100	- - - -	C, Sp. 4-5	0,6(1,0)			
650	- - - -					
500	- - - -					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.11	100	min.8,5	200	0,7-0,9
							250	6,9-7,1	500	3,2-3,5
							350-410	= 2,0	800	5,0-5,2
ca.47	10,5	1140-1150							1100	7,9
	4,0	1210-1240								
	1350	0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation 2b intermediate speed: rev/min 4a 3	Fuel delivery characteristics 5a high idle speed 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery 6 idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9 + 0,1
LDA 800	0,7 bar 160,0-162,0 (157,5-164,5)	1140-1150*	LDA 650	0,7 bar 160,0-164,0 (157,0-167,0)	100	215,0-235,0 (211,0-239,0)	1100	11,5
							800	12,8
							900	12,4
			LDA 500	0,17 bar 122,0-126,0	±3		980	11,8
LDA 1100	0,7 bar 136,0-140,0 (133,0-143,0)		LDA 500	0 bar 98,0-100,0	±3			

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.84

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

C5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

MAN 11,1 v 3

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
375 with 579	0,7		12,8 - 12,9
		0,28	12,1 - 12,2
		0,11	10,7 - 11,0
		0	10,2 - 10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 b
3. Edition

En

PE 6 P 120 A 320 RS 377 RQV 250-1200 PA 425 R
Komb.-Nr. 0 401 846 400

supersedes 11.82
company RVI
engine: MIDS 062030
158 KW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 -2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	15,0-15,2	0,5(0,9)			
275	5,4-5,6	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 12	200	min. 7,5	250	1,0-1,2
ca. 65	11,6	1240-1250					275	5,4- 5,6	850	4,6-4,9
	4,0	1320-1350							1200	8,0
	1450	0-1,0				280-380 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 150,0-152,0 (147,0-155,0	1240-1250*	LDA 350	0 bar 51,0-55,0 (48,0-58,0)	-	-	-	-
					275	11,0-17,0 (8,0-20,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.84

C7

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

C7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..RS 377 +RQV..PA 425R	0,70	0 0,20 0,16	12,6-12,7 11,1-11,2 12,2-12,3 11,4-11,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C8

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 7,0 h
1. Edition

En

PE 6 P 100 A 320 RS 386 RSV 200-900 P1/421
Komb.-Nr. 0 401 876 265

supersedes
company Volvo-Penta
engine D 70 C/HC/RC

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	8,6-8,7	7,1-7,3	0,3(0,6)			
225	7,0-7,2	1,1-1,5	0,2(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	225	6,6	-	-
	x =						225	7,0-7,2		
ca. 48 (2a)	7,6	940-950					340-400	=2,0		
	4,0	970-1000								
	1100	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
900	71,0-73,0 (69,0-75,0)	940-950*	-	-	100	200,0-250,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C9

C9

Testoil-ISO 4113

PES 6 P120 A 720 LS 388 RQ250/1100 PA 509 (1)
RQV250-1100 PA 504 (2)

supersedes 7.83
company MAN
engine D 2566 MK
206 kW (280 PS)

Komb.-Nr. 0 402 046 208 (1)
0 402 046 209 (1)
0 402 046 204 (2)
0 402 046 205 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4-11,5	17,7 - 18,1	0,5(0,9)			
250	6,2-6,4	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ - 509

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3
1100	Breakway			4,0	1180-1210			250	6,2-6,4	975	10,4-10,6
1400	0- 1,0	VH ca.	49°							875	11,0-11,1
								350-	390=2,0		
										750	11,4-11,5

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar		LDA	0,7 bar		
750	117,0 - 181,0		650	174,0 - 177,0	100	215,0-235,0
	(174,0 - 184,0)		LDA	0,31 bar	250	12,0- 18,0
			500	134,0 - 140,0		
LDA	0,7 bar				100-	170 (80-190)
1100	166,0 - 172,0		LDA	0 bar		
	(162,6 - 175,5)		500	102,0 - 106,0		

Checking values in brackets (col. 4-5 inrease by ± 3 cm³)

3.84

C10

B. Governor Settings

ROV - 504

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1100	15,2-17,8					ca. 15	100	min.7,8	250	1,2
								250	6,2-6,4	500	4,0-4,3
ca.66	9,2	1140-1150						395-455	= 2,0	1150	8,4
	4,0	1220-1250									
	1400	0 - 1,0					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0,7 bar				
750	177,0 - 181,0	1140-1150*	650	171,0 - 177,0	100	215,0-235,0	1100	10,2-10,3
	(174,0 - 184,0)		LDA	0,31 bar	250	12,0- 18,0	975	10,4-10,6
LDA	0,7 bar		500	134,0 - 140,0			875	11,0-11,1
1100	166,0 - 172,0		LDA	0 bar	100-170	(80-190)	750	11,4-11,5
	(162,5 - 175,5)		500	102,0 - 106,0				

Checking values in brackets (Sp.4-5 (increase by ± 3 cm³)

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm
388 + 509	0,7		11,4 - 11,5
		0,43	10,9 - 11,1
		0,31	10,3 - 10,4
		0	9,2 - 9,3
388 + 504	0,7		11,4 - 11,5
		0,43	10,9 - 11,1
		0,31	10,3 - 10,4
		0	9,2 - 9,3

En

C11

CAA

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 v 1
1. Edition

Ea

PE6P 110 A 320 RS 407-1 RSV 275-1100 P 5/458-4
Komb.-Nr. 0 401 876 276

supersedes -
company DAF
engine DKTL 1160

Testoil 30 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75- 2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3+0,1	13,9-14,2	0,4 (0,75)			
275	7,0-7,2	1,0- 1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0 x = 3,25	-	-	-	ca. 18	275	6,6	400	12,5-12,6
							275	7,0-7,2	300	12,7-13,2
ca.47	11,3	1135-1145					675 - 745 =2,0			
(2a)	4,0	1275-1305								
	1350	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1135-1145*	LDA	0 bar	100	245,0-285,0	275	7,1
850	139,0-142,0		600	135,5-138,5		(241,0-289,0)		
	(136,5-144,5)			(133,0-141,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE6P..RS 407-1 +RSV..P5/458-4	0,70	0 0,30	12,3 - 12,4 12,1 - 12,2 12,2 - 12,3

Notes:

( ) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 14,9 c
1. Edition

En

PES 8 P 120 A320 RS 466 RQV 275-1050 PA 665
1-8-4-2-7-3-6-5 je 45° ± 0,5° (± 75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company RVI
engine MIVS 083530
268 KW
Komb.-Nr.0 402 048 042

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing mark 13° after port closing cyl. 1

Port closing at prestroke 2,8 - 2,9 (2,75 - 2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,6-9,7	19,2-19,4	0,5(0,9)			
275	2,6-2,8	1,7- 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.7	200	min. 4,2	275	1,5-1,6
ca.63	8,6	1105-1115					275	2,6- 2,8	400	3,1-3,4
	4,0	1175-1205					275-325=	2,0	525	4,0-4,5
	1300	0-1,0							650	5,0-5,2
						(3a)			1050	7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1050	0,9 bar 192,0-194,0 (189,0-197,0)	1105-1115*	LDA 500	0 bar 119,0-121,0 (116,0-124,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2,84

C14

CAY

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES8P..RS 466 +ROV...PA 665	0,90	 0 0,30 0,26	9,6 - 9,7 7,7 - 7,8 9,0 - 9,1 8,1 - 8,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 9,6 k 1

1. Edition

En

PE 6 P 100 A 320 LS 805 EP/RSV 575-1250 PO/814

supersedes

company Daimler-Benz

engine OM 401
129 kW (175 PS)

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	11,7-12,4	0,4			
600	9,0 15,0	5,0-6,2 15,3-17,0				
200	9,0	3,5-4,5				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 63	1250 1280 1310	16,0 12,1 5,2	without auxiliary spring	ca. 30	575 200	4,7 19-21	-	-
ca. 62 (2a)	1250 1300 1370	ca.9,7 ca.4,1 0,3-1,0	with auxiliary spring		575 620	4,3-5,0 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230	93,0-95,0 (91,0-97,0)	1265-1275*	-	-	High idle speed 1290-1305	4,1 mm RW Streuung max. 6		

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MB 9,6 b

6. Edition

En

PE 6 P 100 A 320 LS 818 RSV 350-1250 PO/810
Komb.-Nr. 0 401 876 183

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ±0,5° (±0,75°)

supersedes 1.79
company Daimler-Benz
engine OM 401
141 kW (192 PS) (1)
129 kW (175 PS) (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,3+0,1	10,2-10,4	0,3(0,6)			
350	7,2-7,4	1,4-2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 34	350	7,3	-	-
	X =						350	7,2-7,4		
ca. 62 (2a)	9,3	1280-1290					580-640	= 2,0 **		
	4,4	1360-1380								
	1400	0,3-1,7								

The numbers denote the sequence of the tests ** Set auxiliary idle spring at 2,0 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230 (1)	102,0-104,0 (100,0-106,0)	1280-1290*	-	-	100	140,0-160,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

C17

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.63	1250 1350 1450	14,0 8,7 2,8	without auxiliary spring with auxiliary spring			ca. 31	350	5,9	-	-
							100 350 450 500	19-21 5,6-6,2 0,9-3,1 0-1,0		
ca.60 (5)	1250 1360 1430	ca.10,8 ca. 4,4 0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note: changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1230 (2)	93,0-95,0 (91,0-97,0)	1280-1290*	- (6a)	-	100	110,0-130,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test oil ISO 4113

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note: changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

C18

En

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 9,6 b 2

1. Edition

En

PE 6 P 100 A 320 LS 818 RSV 350-1100 PO/813

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ±0,5° (±0,75°)

supersedes -
company Daimler-Benz
engine OM 401
121 kW (165 PS) (1)
110 kW (150 PS) (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	11,7-12,4	0,4			
600	9,0 15,0	5,0-6,2 15,3-17,0				
200	9,0	3,5-4,5				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 56	1100 1200 1270	14,0 8,9 4,2	without auxiliary spring	ca. 32	350 200	5,9 19-21	1080 500	0 0,1-0,3
ca. 53 (2a)	1100 1195 1300	ca. 9,7 ca. 3,9 0,3-1,0	with auxiliary spring		350 420 530	5,6-6,2 2,4-4,1 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1080	87,0-89,0 (85,0-91,0)	1115-1130*			100 High idle speed 1180-1200	110,0-130,0 3,9 mm RW		
(2) 1080	77,0-79,0 (75,0-81,0)	1115-1130*				Streuung max. 6		

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C19

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11.0 m
3. Edition

En

PE 6 P 110 A 720 RS 3006 RQV 250-1100 PA 184 R (1)
.. PA 242 R (2)

supersedes 1.82
company Scania
engine DS 11

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3.3-3.4 (3.25-3.45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0.1	13.3-14.1	0,6			2,5 ± 0,1 ** (max.2.2-2,9)
600	9,0-9.1	6,8-8,0				
	12,0+0,1	13,1-14,6				
	15.0+0.1	19,9-21,6				
200	9,0-9.1	4,4-5.4				

Adjust the fuel delivery from each outlet according to the values in [ ].

** In case valve-spring spread is higher, change the initial tension accordingly.

B. Governor Settings

RQV..PA 184 R (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca. 66	1150	16.0-19.0	-	-	-	ca.10	100	5,3-7,9	1170	8.3
	1440	0					250	4,8-6,4		
ca. 62	1100	15.0-17,4					400	2,5-3,8		
	1200	8,4-12,3					550	1,0-2,4		
	1300	1.0-6.4					680	0		
	1400	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100 (1)	0.7 bar 173.9-175.0 (171.0-177.0)	1135-1145*	LDA 600	0.7 bar 173.0-177.0 (171.0-179.0)	100	190.0-240.0	-	-
					225	10.0-12.0 Streuung max. 2.0		
			LDA 500	0 bar 135.0-141.0 (133.0-143.0)	200	29.0-34.0 Streuung max. 4.0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

C20

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca.10	100	min. 7,8	200	0,6-0,8
ca.64	12,2	1140-1150					250	6,3-6,5	500	3,9-4,4
	4,0	1260-1290					370 -	430=2,0	800	5,7-5,9
	1400	0-1,0							1100	8,3
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1140-1150*	LDA	0,7 bar	100	190,0-240,0	-	-
1100	161,0-163,0		600	164,5-169,5		=20,0- 21,0		
(2)	(159,0-165,0)			(162,0-172,0)		mm RW		
			LDA	0 bar				
			500	133,0-137,0				
				(131,0-139,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Test oil ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm
PE6P..RS 3006 +ROV..PA 184R	0,43-0,46	0,20-0,24	0,1 1,3
PE6P..RS 3006 +ROV..PA 242R	0,70	0 0,34 0,26	13,2-13,3 12,1-12,2 12,8-12,9 12,3-12,5

En

C21

C21

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 SCA 8,0 k

6. Edition

En

PE 6 P 110 A 720 RS 3034 RSV 350-1200 P 1/462 R

Komb.-Nr. 0 401 876 715

supersedes 6.83

company Scania

engine DS 8 05

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm from BDC RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
700	12,8+0,1	12,1-12,3	0,5(0,7)			2,5 ± 0,1 (2,2 - 2,9)
350	5,9-6,1	-	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	350	5,5	-	-
	x = 4,0						350	5,9-6,1		
ca. 71 (2a)	11,8	1240-1250					500-560=2,0			
	4,0	1310-1340								
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	121,0-123,0 (119,0-125,0)	1240-1250*	1200	126,5-131,5 (124,0-134,0)	100	190,0-240,0 =20,0-21,0 mm RW	350	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C22

C22

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 8,0 d
5. Edition
En

PE 6 P 110 A 720 RS 3034 RQV 200-1200 PA 275 R

supersedes 6.83
company Scania
engine DS 804

Komb.-Nr. 0 401 846 709

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (~~3,25-3,45~~) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,3+0,1	11,7-11,9	0,5 (0,7)			2,5±0,1
225	4,4-4,6	0,9-1,3	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 9 (3a)	100 225 330-390	min.5,9 4,4-4,6 = 2,0	150 500 850 1200	0,6-0,8 3,8-4,4 5,9-6,1 8,4
ca. 62	11,3 4,0 1500	1240-1250 1370-1400 0 - 1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 600	0,9 bar 117,0-119,0 (114,5-121,5)	1240-1250 *	LDA 1200	0,9 bar 119,5-122,5 (116,5-125,5)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 81,0-85,0 (79,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS3034 + RQV.. PA 275 R	0,90		12,3-12,4
		0	10,6-10,7
		0,40	11,9-12,0
		0,25	10,8-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C24

C24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 8,0 i

5. Edition

En

PE 6 P 110 A 720 RS 3034 RQV 200-1200 PA 554

Komb.-Nr. 0 401 846 733

superseded 6.83

company Scania

engine DS 805

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,8+0,1	12,1-12,3	0,5(0,7)			2,5+0,1
225	5,9-6,1	1,5-1,9	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.16 (3a)	100 225	min.7,4 5,9-6,1	150 500 850 1200	0,5-0,8 3,8-4,5 5,9-6,1 8,4
ca. 64	11,8 4,0 1500	1240-1250 1385-1415 0-1,0					410-470 =2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 121,0-123,0 (119,0-125,0)	1240-1250*	LDA 1200	0,9 bar 126,5-131,5 (124,0-134,0)	100	190,0-240,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 85,0-89,0 (83,0-91,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D1

21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
PE 6 P..RS 3034 +RQV.. PA 554	0,90	0 0,33 0,22	12,8-12,9 11,6-11,7 12,5-12,6 11,7-11,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D2

D2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 8,0 i 1
3. Edition
En

PE 6 P 110 A 720 RS 3034 Z RQV 200-1200 PA 554
Komb.-Nr. 0 401 846 770

supersedes 6.83
company Saab Scania
engine DS8 05

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 - 3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	10,1 - 10,3	0,5(0,7)			25 ± 0,1
225	5,9-6,1	1,5 - 1,9	0,2(0,4)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	rev/min 10	mm 11
max.	1220	15,2-17,8	-	-	-	ca. 16	100	min. 7,4	150	0 -1,0
ca. 61	10,8	1240-1250					225	5,9- 6,1	500	3,4-3,9
	4,0	1360-1390							850	5,4-5,8
	1500	0 - 1,0					410-470	= 2,0	200	7,9
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation ②b intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery ⑥ idle switching point		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 101,0-103,0 (99,0-105,0)	1240-1250*	LDA 1200	0,9 bar 110,5-115,5 (108,0-118,0)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 85,0-89,0 (83,0-91,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

BOSCH
Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D. Adjustment Test for Manifold Pressure Compensator

SCA 8,0 i 1

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 3034 Z + RQV..PA 554	0,90	0 0,21	11,8 - 11,9 11,6 - 11,7 11,7 - 11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D4

D4 En

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 SCA 11,0 r 4 **40**
5. Edition

En

PE 6 P 110 A 720 RS 3040 RSV 350-1100 P1/481
Komb.-Nr. 0 401 876 720

supersedes 6.83
company Scania DS 11 05
engine Case

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	15,6-15,8	0,6(0,8)			
350	4,4-4,6	1,8-2,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	350	4,0	-	-
	x =	2,75					100	min. 20,0		
							350	4,4-4,6		
ca. 66 (2a)	12,1	1140-1150					460-520	= 2,0		
	4,0	1220-1250								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	156,0-158,0 (154,0-160,0)	1140-1150*	700	157,5-160,5 (155,0-163,0)	100	240,0-290,0 = RW 20,0-21,0 mm	-	-
					350	18,0-22,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D5

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 DEE 15,6 a
1. Edition

En

PES 8 P 110 A 120 RS 3044 EP/RSV 400-1050 P2/435 DR
Komb.-Nr. 0 402 068 700
1-5-6-3-4-2-7-8 je 45° ± 0,5 (± 0,75°)

supersedes -
company John Deere
engine 8955 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,75-2,85 (2,70-2,90) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1050	10,0+0,1	14,7-14,9	0,4(0,75)			
400	5,2-5,4	2,2- 2,8	0,4(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.21	400	4,6-4,8	1050	10,0-10,1
							100	min.16,0	750	10,9-11,2
							400	5,1-5,3	550	9,5- 9,6
ca.43,5 (2a)	9,0	1095-1105					565-625	= 2,0		
	4,0	1155-1185					800	max.1,0		
	1275	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1050	0,65 bar 147,0-149,0 (144,0-152,0)	1095-1105*	LDA 750	0,65 bar 163,5-166,5 (160,0-170,0)	100	180,0-200,0 =19-21mmRW	-	-
			LDA 550	0 bar 130,0-134,0 (127,0-137,0)	High idle 1155	speed 37,0-47,0		
					Low idle 400	speed 22,0-28,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D6

D. Adjustment Test for Manifold Pressure Compensator

DEE 15,6 a

Test at n = 550 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 8P..RS 3044	0,38		10,7-10,8
+ EP/RSV..P2/435DR		0,27	9,7-10,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D7

En 91

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 VOL 12,0 d 2
3. Edition
Ea

PE 6 P 120 A 320 RS 3050 RQV 250-1025 PA 611
Komb.-Nr. 0 401 846 751

supersedes 83
company Volvo
engine TD 120 FC

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4 - 2,5 (2,35-2,55) mm (from BDC) bei RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	23,8 - 24,0	0,5(0,9)			2,5 ± 0,1 (2,2 - 2,9)
250	3,6-3,8	2,2 - 2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	ca. 8	100	min.5,1	200	0,6-0,9
							250	3,6- 3,8	475	3,9-4,5
ca.64	12,0	1085-1095					300-360 = 2,0		670-940	6,4-6,6
	4,0	1150-1180							1025	7,5
	1300	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 237,5-239,5 (234,5-242,5)	1085-1095*	LDA 700	0 bar 142,0-144,0 (139,0-147,0)	100	20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

D8

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D8

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure VOL 12,0 d 2

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P..RS3050 with..PA611	0,67	1,20 0 0,3	13,0 - 13,1 9,1 - 9,2 12,2 - 12,3 10,5 - 10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8
4. Edition

En

Testoil-ISO 4113

PE 10 P 110 A 920/5 LS 3073 RQV 300-1150 PA 549
Komb.-Nr. 0 401 849 703
1-10-9 - 4- 3 - 6 - 5 - 8 - 7 - 2
0-27-72-99-144-171-216-243-288-315 ° ±0,5 ° (±0,75 °)

supersedes 83
company KHD
engine BF 10L 413 F
265 kW (360 PS)
bei 2050 min -1
bzw. 259 kW (352PS)
(Maxidyne)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,6+0,1	13,8-14,0	0,4(0,8)			
300	6,9-7,1	1,8 - 2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1220	15,2-17,8	-	-	-	ca. 24 (3a)	100 min.8,4 300 6,9-7,1 465-525 = 2,0		250 0,5-0,8 550 3,6-4,2 850 5,4-5,7 1150 7,8	
ca. 64	9,7 4,0 1400	1190-1200 1270-1300 0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 138,0-140,0 (135,0-143,0)	1190-1200 *	LDA 500	0 bar 85,0-89,0 (82,0-92,0)	100	110,0-140,0	1150 1025 875 800	10,7+0,2 10,9+0,2 11,4+0,2 11,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

D10

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D10

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 10 P..LS 3073 RQV.. PA 549	0,55	0,90 0 0,39	11,2-11,3 11,6-11,7 9,4-9,5 10,1-10,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D11

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 RVI 12,0 e

1. Edition

En -

PES 6 P 120 A 320 RS 3117 RQV 275-950 PA 495-1
Komb.-Nr. 0 402 046 740

supersedes

company: RVI

engine: MIDR 063540
224 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Port closing mark 9° after port closing cyl. 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	13,1+0,1	20,4-20,6	0,5(0,9)			
275	4,5-4,7	1,3-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca.10	200	min. 6,2	250	1,0-1,2
							275	4,5-4,7	450	3,4-3,8
ca. 63	12,1	1015-1025							800	5,8-6,0
	4,0	1150-1180							1100	8,1
	1300	0 - 1,0				285-395 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 950	0,7 bar 204,0-206,0 (201,0-209,0)	1015-1025*	LDA 500	0 bar 123,0-125,0 (120,0-128,0)	100	160,0-180,0 (156,0-184,0)	-	-
					275	14,0-20,0 (11,0-23,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.84

D12

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

DA2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..RS 3117 + RQV.. PA 495-1	0,70	0 0,42 0,34	13,1-13,2 10,3-10,4 12,5-12,6 10,9-11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D13

En 213

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RVI 12,0 e 1
1. Edition
En

PES 6 P 120 A 320 RS 3117 RQV 275-1100 PA 495-2
Komb.-Nr. 0 402 046 741
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company RVI
engine MIDR 063540
224 kW

Port closing mark 9° after port closing cyl. 1

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	20,4-20,6	0,5(0,9)			
275	4,5-4,7	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	–	–	–	ca. 10	200 275	min. 6,2 4,5-4,7	250 450 800 1100	1,0-1,2 3,4-3,8 5,8-6,0 8,1
ca. 66	12,1 4,0 1400	1165-1175 1270-1300 0 - 1,0				285-395 (3a)				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 204,0-206,0 (201,0-209,0)	1165-1175*	LDA 500	0 bar 123,0-125,0 (120,0-128,0)	100 275	160,0-180,0 (156,0-184,0) 14,0-20,0 (11,0-23,0)	–	–

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 P..RS3117 +RQV..PA 495-2	0,70	0 0,42 0,34	13,1-13,2 10,3-10,4 12,5-12,6 10,9-11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D15

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 K 2

1. Edition

EB

PE 6 P 120 A 320 RS 3118 RQV 300-1050 PA 657-2
Komb.-Nr. 0 401 846 779

supersedes

company Volvo BM

engine TD 121 F

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	23,5-23,7	0,5 (0,9)			2,5±0,1 (2,2-2,9)
300	3,7-3,9	2,2-2,6	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 10	100	min. 5,2	250	1,1-1,3
ca. 64	12,2	1105-1115					300	3,7-3,9	450	3,7-4,2
	4,0	1180-1210					350-410	= 2,0	660	
	1325	0 - 1,0							-	6,4-6,6
									985	
						(3a)			1050	7,4

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 235,0-237,0 (232,0-240,0)	1105-1115 *	LDA 1000	1,2 bar 231,0-237,0 (228,0-240,0)	100	24,0-270,0 = 20,0-21,0 mm RW	-	-
			LDA 700	0 bar 136,0-138,0 (133,0-141,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..RS 3118 + RQV..PA 657-2	1,20	0 0,64 0,25	13,2-13,3 8,9-9,0 12,2-12,3 10,0-10,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D17

D17

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d
3. Edition
En

Testoil-ISO 4113

PE 10 P 110 A 320 LS 3818 RQV 300-1150 PA 486-2

supersedes 83
company Daimler-Benz
engine OM 423
261 kW (355 PS)

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

Komb.-Nr. 0 401 849 706

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,4 - 12,6	0,4(0,8)			
300	8,5-8,7	1,4 - 2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 19	100	min.10,2	250	1,0-1,2
							300	8,5-8,7	550	3,4-3,7
ca. 65	11,1	1190-1200							850	4,9-5,3
	4,0	1240-1270				330-470			1150	7,6
	1400	0 - 1,0				③a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1150	124,0-126,0 (121,5-128,5)	1190-1200 *	600	110,0-114,0 (107,0-117,0)	100	10,0-10,0	1150	12,1+0,1
							600	12,5+0,1
			900	118,0-123,0 (115,0-126,0)			900	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.84

D18

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

D18

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 21,9 a 3
1. Edition

En

PE 12 P 120 A 320 LS 3819-1 RQ 750 PA 635-1
1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315°+ 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company Daimler-Benz
engine OM 424 LA
327 kW
Komb.-Nr. 0 401 840 714

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95 - 4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	19,0 - 19,2	0,5 (0,8			
300	4,8-5,0	1,4 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,8 4,0 900	750-755 780-790 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750 - 755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	190,0 - 192,0 (187,0 - 195,0)	-	-	-	100	160,0 - 180,0 (156,0 - 184,0)

Checking values in brackets

2,84

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

D19

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 GUS 18,0 a
1. Edition

En

PE 6 P 130 A 720 RS 7009 ROV 250-1000 PA 683
Komb.-Nr. 0 402 646 816
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company Guascor
engine F 180
220 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 -3,1 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 000	14,5+0,1	31,6 - 32,0	0,6(1,05)			
250	6,4-6,6	2,6 - 3,2	0,95(1,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1060	15,2-17,8	-	-	-	ca. 13	100	min.8,0	225	1,2-1,3
ca. 62	13,5 4,0 1300	1040-1050 1155-1185 0-1,0				250-350 (3a)	250	6,4-6,6	375 800 1000	2,7-3,2 5,6-5,8 7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
1000	316,0-320,0 (311,5-324,5)	1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2,84

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

D20

2s

Test specifications Fuel injection pumps and governors

40

WPP 001/4 MTU 29,9 a 1
1. Edition

En.

PE 8 ZWM 140/120 RS 19/11 RQU 375/1100 ZWA 19 DR
Komb.-Nr. 0 406 038 005

Replaces

Firm MTU
Engine MB 837 A a

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)
Note VDT-W-Gen./7
Governor adjustement according to VDT-I-420/112
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	
600	9,0	143,0-163,0	14,0 (21,0)	138,0-166,0	-
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	8,0 (12,0)	C, Sp. 2	
375			8,0		

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
max.	500	23,5-24,0	(Position of slider)			22	600	2,1-2,6	500	21,7-22,1
ca. 58	1100	19,0-19,5					150	12,0-14,0	700	20,9-21,5
	1130	15,0-18,0					250	10,4-12,4	1000	19,5-20,0
	1200	6,2-12,4					375	5,6-6,0	1100	19,0-19,5
	1250	0 - 7,8					500	2,3-3,1		
	1350	0 - 1,0			1100 0,4-1,6 1180 0		900	1,1-2,0		

Torque control travel a = 0,8 mm Speed regulation: At 1075-1085 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	[illegible] stop: min 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1080	232,0-236,0 (229,0-239,0)	1220 RW max. 5 mm	900	228,0-236,0 (224,0-240,0)	-	-
			700	228,0-236,0 (224,0-240,0)		
			500	216,0-224,0 (212,0-228,0)		

Checking values in brackets

12.83

Test specifications Fuel injection pumps and governors

En.

WPP 001/4 MTU 29,9 a

10. Edition

Replaces 1.83
Firm MTU
Engine MB 837 A a

PE 8 ZWM 140/120 RS 19/11   RQU 375/1100 ZWA 25 DR
Komb.-Nr. 0 406 038 019

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)
Note VDT-W-Gen./7
Governor adjustement according to VDT-I-420/1.12

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-166,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	8,0 (12,0)	C, Sp. 2	
380			8,0		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min 8	Control-rod travel mm 9	Torque control: min 10	Control-rod travel mm 11
max.	500	23,5-24,0	(Position of slider)			22	600	2,1-2,6	500	21,7-22,1
ca. 58	1100	19,0-19,5					150	12,0-14,0	700	20,9-21,5
	1130	15,0-18,0					250	10,4-12,4	1000	19,5-20,0
	1200	6,2-12,4					375	5,6-6,0	1100	19,0-19,5
	1250	0 - 7,8			1100	0,4-1,6	500	2,3-3,1		
	1350	0 - 1,0			1180	0	900	1,1-2,0		

Torque control travel a = 0,8 mm   Speed regulation At 1075-1085 min⁻¹ control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel* delivery: min⁻¹ 6	cm³/1000 strokes 7
1080	232,0-236,0 (229,0-239,0)	1220 RW max. 5 mm	900	228,0-236,0 (224,0-240,0)	100	18,0-18,2 mm RW
			700	228,0-236,0 (224,0-240,0)		idle stop
			500	216,0-224,0 (212,0-228,0)	375	53,0-58,0

Checking values in brackets

12.83

* Limit the quantity at the exess-fuel stop.

2s

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 37,4 b

En.

12. Edition

PE 10 ZWM 140/120 RS 38/11 RQU 425/1100 ZW 30 DR
Komb.-Nr. 0 406 039 109
Governor adjustement according to VDT-I-420/112

Replaces 2.83
Firm MTU
Engine MB 838 Ca M

1- 2- 9- 10- 3 - 4 - 5 - 6 - 7 - 8
0-45-72-117-144-189-216-261-288-333° ± 0,5° (± 0,75°)
Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) Zyl. 10

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	9,0 (14,0)		
900/550	-	C, Sp. 5	11,0 (16,0)		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Medium rated speed: Control lever flection degrees 4	min 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
max.	600	18,0-18,5	(Position of slider)		-	ca.27	600	0,5-1,8	700	17,6-18,0
ca. 58	1100	16,5-16,7					150	16,5-18,0	900	16,8-17,2
	1150	12,0-14,6					350	10,2-12,6	1050	16,5-16,7
	1200	7,0-10,8					425	5,3-5,8		
	1250	2,0-6,4			1100	0,2-1,1	500	1,5-3,5		
	1350	0-1,0			1140	0	800	0,6-1,2		

Torque control travel a 0,35 ±0,03 mm Speed regulation At 1130 min⁻¹ 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min 1	cm³/1000 strokes 2	Control rod stop at speed min 3	Fuel-delivery characteristics min 4	cm³/1000 strokes 5	Starting fuel delivery min 6	cm³/1000 strokes 7
1080	316,0-320,0 (313,0-323,0)	-	900	305,0-313,0 (301,0-317,0)	100	18,0-18,2 mm RW
			550	271,0-279,0 (267,0-283,0)	425	51,0-57,0
					1220	RW max. 5 mm

Checking values in brackets

Shutoff solenoid
0,5 - 1,5 mm in
front of stop

D23

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 e 1
2. Edition
En.

Replaces

PE 8 ZWM 150/120 RS 1036 RQU 300-500/1150 ZWA 66 R
0 406 038 025 governor adjustment according to VDT-I-420/112
1-2-6-3-4-5-7-8 each 45° (± 0,75°)
Stamp prestroke dimension on top side of pump! Note VDT-W-Gen./7!

Firm 5.83
Engine MTU MB 837 Türkei

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Cyl.8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	527,0-537,0	14,0 (21,0)	524,0-540,0	-
1000	9,0	175,0-195,0	12,0 (18,0)	170,0-200,0	
300	9,0	104,0-124,0	16,0 (24,0)	99,0-129,0	
1150	11,5		12,0 (18,0)		
700	12,5	Section C	16,0 (24,0)		
425			12,0		

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 65	800	18,0-18,5		ca.19	300	7,0	ca.33	425	6,6-6,9	1100	10,0
	1150	11,5						300	13,0-15,0	800	10,8+0,2
	10,7	1210-1230						400	7,8- 9,0		
	5,0	1255-1280		ca.39	500	7,0		500	1,0- 3,3	Preliminary	
	0	1295-1315						535	0 - 0,5	examination	

Torque control travel a = 0,5 · mm + 0,05 Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed Shutoff solenoid min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel Idle speed min⁻¹ 6	cm³/1000 strokes 7
1150	285,0-289,0 (283,0-291,0)	0,5, 1,5mm in front of stop	700	295,0-305,0 (292,0-3,0,0) *	425	53,0-59,0

Checking values in brackets * Limit the quantity at the exess-fuel stop

Test specifications Fuel injection pumps and governors

PE 6 ZWM 150/120 RS 1031/11 RQU 425/1200 ZWA 63 R
Komb.-Nr. 0 406 036 031
VDT-I 420/112; VDT-W-Gen./7

Replaces: 3.83
Firm: MTU
Engine: MB 833-TAM

1 - 2- 3 - 4 - 5 - 6 Please note instructions on sheet 2
0 -45-120-165-240-285° ± 0,5° (± 0,75°)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	523,0-533,0	16,0 (24,0)	520,0-536,0	-
1000	9,0	176,0-196,0	13,0 (19,9)	171,0-201,0	
300	9,0	113,0-133,0	14,0 (21,0)	108,0-138,0	
1200	11,9	C Sp. 2	10,0 (15,0)		
800			16,0 (24,0)		
425			9,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	min⁻¹	Medium rated speed Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control min⁻¹ 10	Control-rod travel mm 11
max.	1200	18,0-18,5		-	-	-	ca.23	425	6,5	-	-
	10,9	1220-1235						200	14,8-18,0		
	5,0	1250-1300						400	7,6-8,1		
	0	1320-1370						600	0,5-1,5		
								1200	0,5-1,5		
								1275	0		

Torque control travel a = - mm Speed regulation: At 1225-1240 min⁻¹ less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	Leerlauf cm³/1000 strokes 7
1200	297,0-301,0 (295,0-303,0)	-	800	282,0-315,0 (278,0-319,0)	425	52,0-66,0

Checking values in brackets

11.83

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Printed in the Federal Republic of Germany by Robert Bosch GmbH

1. When testing the injection-pump combination, the oil-metering valve must be unscrewed to prevent destruction by running dry.

2. Set stop screw at 1 mm.

3. Set shutoff device to 0.5 - 1.5 mm

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 22,4 d 1

En. 2. Edition

Replaces ...
Firm: 3.83
Engine: MTU MB 833 - TAM

PE 6 ZWM 150/120 RS 1031/11 Z RQU 425/1200 ZWA 63 R
Komb.-Nr. 0 406 036 033

1- 2- 3 - 4 - 5 - 6
0-45-120-165-240-285° ± 0,5° (± 0,75°)

VDT-I-420/112; VDT-W-Gen./7 . Please note instructions on sheet 2
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	523,0-533,0	16,0 (24,0)	520,0-536,0	-
1000	9,0	176,0-196,0	13,0 (19,0)	171,0-201,0	
300	9,0	113,0-133,0	14,0 (21,0)	108,0-138,0	
1200	13,2	C Sp. 2	11,0 (16,0)	C Sp. 2	
800			16,0 (24,0)		
425			9,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	Control-rod travel mm / min⁻¹ 2	Control-rod travel mm / min⁻¹ 3	Medium rated speed: Control lever deflection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
max.	1200	18,0-18,5	-	-	-	ca.23	425	6,5	-	-
	12,2	1225-1240					200	15,0-18,0		
	5,0	1280-1325					400	7,1-9,0		
	4,0	1290-1335					600	0,5-1,5		
	0	1320-1375					1200	0,5-1,5		
							1275	0		

Torque control travel a = - mm Speed regulation: At 1225-1240 min⁻¹ less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min 6	Leerlauf cm³/1000 strokes 7
1200	345,0-349,0 (343,0-351,0)	-	800	343,0-353,0 (340,0-356,0)	425	52,0-66,0

Checking values in brackets

11.83

E3

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

E3

1. When testing the injection-pump combination, the oil-metering valve must be unscrewed to prevent destruction by running dry.

2. Set idle stop at n = 425 min^{-1} at 6.5 mm control-rod travel.

3. Set stop screw at 1 mm.

4. Set shutoff device to 0.5 - 1.5 mm.

E4

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 e
2. Edition
En.

PE 8 ZWM 159/120 RS 1036 RQU 300-500/1100 ZUA 66 R
0 406 038 025 governor adjustment according to VDT-I-420/112
1-2-6-3-4-5-7-8 each 45° (± 0,75°)
Stamp prestroke dimension on top side of pump! Note VDT-W-Gen./7!

Replaces 5.83
Firm: MTU
Engine: MB 837 Italien

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) cyl.8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	527,0-537,0	14,0 (21,0)	524,0-540,0	-
1000	9,0	175,0-195,0	12,0 (18,0)	170,0-200,0	
300	9,0	104,0-124,0	16,0 (24,0)	99,0-129,0	
1100	12,3	C, col.2+5	14,0 (21,0)	C, col.2+5	
700	12,6		18,0 (27,0)		
425	6,7	C, col.7	12,0		

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm 2	Control-rod travel min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.65	800	18,0-18,5	ca.19	300	7,0	ca.33	425	6,6-6,9	1100	10,0
	1100	12,3					300	13,0-15,0	800	10,8+0,2
	11,3	1135-1145					400	7,8- 9,0		
	5,0	1185-1210	ca.39	500	7,0		500	1,0- 3,3	Preliminary	
	0	1230-1260					535	0 - 0,5	examination	

Torque control travel a = 0,5 · mm +0,05 Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Shutoff solenoid min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Idle speed: min⁻¹ 6	cm³/1000 strokes 7
1100	302,0-306,0 (300,0-308,0)	0,5-1,5 mm in front of stop	700	308,0-318,0 (305,0-321,0) *	425	51,0-61,0

* Limit the quantity at the exess-fuel stop

Checking values in brackets

11.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrustung
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

E5

Test Specifications Distributor-type Fuel-injection Pumps

En

VE 6/11 F 1800 L 18-3
0 460 416 027

supersedes –
company: Volvo
engine: TD 40 A (93 kW)

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply pump pressure	1500	6,6-7,2	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	62,0-63,0	cm³/1000 strokes		2,5 (3,0)
Full-load delivery with charge-air pressure	–	–	cm³/1000 strokes		
1.4 Idle speed regulation	325	8,0-12,0	cm³/1000 strokes		2,5 (3,0)
1.5 Start	100	min. 60,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2000	19,0-25,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1100	1500	1800
	mm	1,6-2,4(1,3-2,7)	(3,1-4,5)	4,5-5,3(4,2-5,6)
2.2 Supply pump	n = rev/min	400		1800
	bar (kgf/cm²)	2,8-3,4		7,7-8,3
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2100	max. 2,0		
	2000		(17,0-27,0)	
	1900	39,0-49,0	(39,0-49,0)	
	1800	56,3-59,3	(55,55-60,05)	
	1500		(60,25-64,75)	
	500	50,0-52,0	(48,25-53,75)	
	500	43,5-45,5	(41,75-47,25)	
switch-off				
Idle stop	400	max. 3,0		
	325		(6,0-14,0)	
End stop	110	min. 60		
	220	max. 40		

2.4 Solenoid	
	max. cut-in voltage xxx min. 10 V ~~xxxxxxxxx~~ rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	–
KF	5,9-6,2
MS	1,2-1,4
SVS	max.4,7
XK	20,2-22,2
XL[B]	10,4-16,4

Observations

E6

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 Vol 3,6 g1
3. Edition

En

Test oil ISO 4113

VE 6/11 F 1800 L 19-7
0 460 416 025

supersedes 6.83
company: Volvo
engine: TAMD 40 B (121 kW)

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,6- 3,0	mm		
1.2 Supply pump pressure	1500	6,2- 6,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	78,0-79,0	cm³/1000 strokes		3,0(3,5)
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	400	8,5-12,5	cm³/1000 strokes		3,0(3,5)
1.5 Start	100	min.60	cm³/1000 strokes		
1.6 Full-load speed regulation	1900	43,5-49,5	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1750
	mm	0,7-1,5(0,4-1,8)	(2,1-3,5)	3,6-4,4(3,3-4,7)
2.2 Supply pump	n = rev/min	400		1750
	bar (kgf/cm²)	2,3-2,9		7,1-7,7
Overflow delivery	n = rev/min	600		1800
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2130	max. 2,5		
	2050	6,5-12,5(5,0-14,0)		
	1900		(42,0-51,0)	
	1770	72,8-75,8	(71,6-77,0)	
	1500		(75,8-81,2)	
	600	68,0-72,0	(66,6-73,4)	
switch-off				
Idle stop	580	0		
	500	max. 2,0		
	400		(6,0-15,0)	
	120	min.60		
End stop	220	max.60		

2.4 Solenoid

max. cut-in voltage xxx min. 10 V
~~cut-in voltage xxx~~ rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 2,3
AK	18,7-20,7
B XL	10,9-14,2

Observations

4.84

E7

E7

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 Vol 3,6p

1. Edition

En

supersedes–

VE 6/11 F 1625 L 19-9

company: Volvo-Penta

0 460 416 030

engine: TAMD 40 B - 105 kW

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Testoil ISO 4113

Pre-stroke setting 0,2 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,6-3,0	mm		
1.2 Supply pump pressure	1500	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	72,5-73,5	cm³/1000 strokes		3,5
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	400	8,5-12,5	cm³/1000 strokes		3,5
1.5 Start	100	min. 60,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1900	15,0-23,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1625
	mm	0,7-1,5(0,4-1,8)	(2,1-3,5)	3,0-3,8(2,7-4,1)
2.2 Supply pump	n = rev/min	400		1625
	bar (kgf/cm²)	2,3-2,9		6,7-7,3
Overflow delivery	n = rev/min	600		1625
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2000	max. 10,0		
	1900		(14,5-23,5)	
	1800	32,5-38,5	(31,0-40,0)	
	1625	66,0-69,0	(64,8-70,2)	
	1500	72,5-73,5	(70,3-75,7)	
	600	58,0-62,0	(56,7-63,4)	
switch-off				
Idle stop	580	0		
	500	max. 2,0		
	400		(6,0-15,0)	
End stop	110	min. 60,0		
	210	max. 50,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V; test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 4,9
A	
B	

Observations

Pushing electro-magnet

E8

E8

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 k
1. Edition
En

VE 6/10 F 2400 L 32-2

0 460 406 037

supersedes
company: VWW
engine: 087/10

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/.

Pre-stroke setting – mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
1.4 Idle speed regulation	375	6,0-[illegible],0	cm³/1000 strokes		2,0
1.5 Start	100	min. 38,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400	
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	6,0-6,8 (5,7-7,1)	
2.2 Supply pump	n = rev/min	600		2400	
	bar (kgf/cm²)	2,8-3,4		7,7-8,3	
Overflow delivery	n = rev/min	600		2400	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 40	
	2700	(5,0-13,0)	
	2400	22,0-24,0 (20,7-25,3)	
	1500	(26,7-31,3)	
	750	26,0-29,0 (24,5-30,5)	
switch-off	70-400	0	
Idle stop	375	(4,0-12,0)	
	600	max. 4,0	
End stop	400	min. 20,0	
	500	max. 25,0	

2.4 Solenoid	max. cut-in voltage xxx min. 10 V [illegible]xxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

E9

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E9

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 k 2
1. Edition
En

VE 6/10 F 2400 L 32-3

0 460 406 038

supersedes –
company VW
engine 087/10

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/.

Testoil-ISO 4113

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0	cm³/1000 strokes		2,0
1.5 Start	100	min. 38	cm³/1000 strokes		
1.6 Full-load speed regulation	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,7-8,3
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 4,0	
	2700	(5,0-13,0)	
	2400	22,0-24,0 (20,7-25,3)	
	1500	(26,7-31,5)	
	750	26,0-29,0 (24,5-30,5)	
switch-off elektr.	70-400	0	
mech.	2400	0	
Idle stop	600	max. 4,0	
	375	(4,0-12,0)	
End stop	400	min. 20,0	
	500	max. 25,0	

2.4 Solenoid

max. cut-in voltage xxx min. 10,0 V
test voltage xxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6.4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

3.84

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6u

4. Edition

En

VE 4/9 F 2100 R 48
0 460 494 039

supersedes 9.82
company VWW
engine EA 162/1,6

Test-ISO 4113

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test-instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,3- 3,7	mm		
1.2 Supply pump pressure	1500	4,8- 5,4	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	415	6,0-10,0	cm³/1000 strokes		2,0(3,0)
1.5 Start	100	min. 35,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2300	11,5-17,5	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2100
	mm	1,2-2,0(0,9-2,3)	(2,8-4,2)	5,4-6,2(5,1-6,5)
2.2 Supply pump	n = rev/min	400		2100
	bar (kgf/cm²)	2,1-2,7		6,3-6,9
Overflow delivery	n = rev/min	600		2100
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2450-2550	0		
	2400	max. 5,5		
	2300		(10,5-18,5)	
	2100	28,0-30,0	(26,7-31,3)	
	1500		(31,2-35,8)	
	600	21,5-24,5	(20,0-26,0)	
switch-off elektr.	400	0		
Idle stop	2000	max. 3,0		
	450	min. 2,0		
	415		(4,0-12,0)	
End stop	400	min. 17		
	500	max. 23		

2.4 Solenoid	max. cut-in voltage xxxxxxxxx test voltage	xxx min. 10,0 V rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2- 3,4
KF	5,7- 5,9
MS	1,3- 1,5
SVS	max. 4,8
+ FH	1,8- 2,4
A XK	18,6-20,6
B XL	7,5-10,8

Observations

+ *operating stroke (KSB)

4.84

E11

EAA

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6t
3. Edition
En

VE 4/9 F 2100 R 48-2 (P)

0 460 494 102; 103

supersedes 10.82
company VWW
engine Typ 2 USA

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting ---- mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,3- 3,7	mm		
1.2 Supply pump pressure	1500	4,8- 5,4	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	415	6,0-10,0	cm³/1000 strokes		2,0(3,0)
1.5 Start	100	min. 35,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2300	11,5-17,5	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2100
	mm	1,2-2,0(0,9-2,3)	(2,8-4,2)	5,4-6,2(5,1-6,5)
2.2 Supply pump	n = rev/min	400		2100
	bar (kgf/cm²)	21,-2,7		6,3-6,9
Overflow delivery	n = rev/min	600		2100
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450-2550		0	
	2400	max. 5,5		
	2300		(10,5-18,5)	
	2100	28,0-30,0	(26,7-31,3)	
	1500		(31,2-35,8)	
	600	21,5-24,5	(20,0-26,0)	
switch-off elektr.	400	0		
Idle stop	2000	max. 3,0		
	450	min. 2,0		
	415		(4,0-12,0)	
End stop	400	min.17		
	500	max.23		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V
xxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.4,8
+ FH	1,8-2,4
XK	18,6-20,6
XL	7,5-10,8
A	
B	

Observations

+ *operating stroke (KSB)

E12

EAL

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 b 3
1. Edition
En

VE 4/10 F 2075 R 62 0 460 404 011
DHK: 1 688 901 022/130 bar
Test pressure line 6x2x450 mm / 1 680 750 073

Overflow temperature 45° C

supersedes company: Peugeot
engine: XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

Testöl-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,2- 5,6	mm	0,67	
1.2 Supply-pump pressure	1400	5,2- 5,8	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	1250	47,5-48,5	cm³/1000 strokes	0,67	2,0(3,0)
Full-load delivery without charge-air pressure	500	36,0-37,0	cm³/1000 strokes	0	
1.4 Idle regulation	375	12,0-16,0	cm³/1000 strokes	0	2,0(3,0)
1.5 Full-speed regulation	2400	12,0-18,0	cm³/1000 strokes	0,67	
1.6 Start	100	min. 57,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1400	-		0,67	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	750	1400	2000
LDA=0,67 bar	mm	1,7-2,5 (1,4-2,8)	(4,7-6,1)	7,9-8,7(7,6-9,0)
2.2 Supply pump	n = rev/min	400		2000
LDA=0,67 bar	bar (kgf/cm²)	2,1-2,7		7,1-7,7
Overflow delivery	n = rev/min	500 (0 bar)		2075 (0,67 bar)
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	5,0-11,0	(4,0-12,0)	0,67
	2400		(11,0-19,0)	0,67
	2000	45,0-48,0	(44,2-48,8)	0,67
	1250		(45,7-50,3)	0,67
	*750	45,5-46,5	(43,0-49,0)	0,25
	500		(33,5-39,5)	0
switch-off	2075	0		
Idle stop	375		(10,0-18,0)	
	420-480	0		
	1250	max. 2,0		
End stop	320	min. 52		
	420	max. 52		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	Maß K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max.4,6
A XK	20,2-22,2
B XL	9,5-12,8

Observations

Manifold-pressure compensator stroke = 3,5 mm
Correction at the adjusting nut. (46)

03.84

E13

E13

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 b 2
1. Edition
En

VE 4/10 F 2125 R 62-2 0 460 404 018
DHK: 1 688 901 022/130 bar
Test pressure line
6x2x450 mm / 1 680 750 073 Overflow temperature 45° C

supersedes company: Peugeot XD 2 S 81A
engine:

Testöl HSO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,2-5,6	mm	0,67	
1.2 Supply-pump pressure	1400	5,2-5,8	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	1250	47,5-48,5	cm³/1000 strokes	0,67	2,0(3,0)
Full-load delivery without charge-air pressure	500	36,0-37,0	cm³/1000 strokes	0	
1.4 Idle regulation	425	12,0-16,0	cm³/1000 strokes	0	2,0(3,0)
1.5 Full-speed regulation	2450	12,0-18,0	cm³/1000 strokes	0,67	
1.6 Start	100	min. 57,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1400	-		0,67	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,67 bar	n = rev/min	750	1400	2000
	mm	1,7-2,5 (1,4-2,8)	(4,7-6,1)	7,9-8,7(7,6-9,0)
2.2 Supply pump LDA=0,67 bar	n = rev/min	400		2000
	bar (kgf/cm²)	2,1-2,7		7,1-7,7
Overflow delivery	n = rev/min	500 (0 bar)		2125 (0,67 bar)
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	5,0-11,0	(4,0-12,0)	0,67
	2450		(11,0-19,0)	0,67
	2000	45,0-48,0	(44,2-48,8)	0,67
	1250		(45,7-50,3)	0,67
	*750	45,5-46,5	(43,0-49,0)	0,25
	500		(33,5-39,5)	0
switch-off	2125	0		
Idle stop	425		(10,0-18,0)	
	460-590	0		
	1250	max. 2,0		
End stop	320	min. 52		
	420	max. 52		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation		for assembly and adjustment mm
K		Maß K 1
KF		5,7-5,9
MS		0,9-1,1
SVS		max.4,5
A	XK	20,2-22,2
B	XL	9,5-12,8

Observations

Manifold-pressure compensator stroke = 3,5 mm
Correction at the adjusting nut. (46)

03.84

E14

E14

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3 b

2. Edition

En

Testoil-ISO 4113

VE 4/10 F 2075 R 62-3

0 460 404 021

Overflow temperature 45° C

supersedes 11.82
company: Peugeot
engine: XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,0-5,4	mm	0,67	
1.2 Supply-pump pressure	1400	5,2-5,8	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	1200	48,7-49,7	cm³/1000 strokes	0,67	
Full-load delivery without charge-air pressure	500	33,5-34,5	cm³/1000 strokes	0	3,0
1.4 Idle regulation	375	12,0-16,0	cm³/1000 strokes	0	2,5
1.5 Full-speed regulation	2400	13,0-19,0	cm³/1000 strokes	0,67	
1.6 Start	100	min. 50	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1400	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,67 bar	n = rev/min	750	1400	2000
	mm	1,4-2,2(1,1-2,5)	(4,5-5,9)	7,8-8,6(7,5-8,9)
2.2 Supply pump LDA=0,67 bar	n = rev/min	400		2000
	bar (kgf/cm²)	2,1-2,7		7,1-7,7
Overflow delivery	n = rev/min	500		2075
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	3,0-9,0	(2,0-10,0)	0,67
	2400		(12,0-20,0)	0,67
	2000	41,8-44,2	(40,7-45,3)	0,67
	1250		(46,9-51,5)	0,67
	* 750	39,5-40,5	(37,7-42,3)	0,25
	500		(31,0-37,0)	0
switch-off	2075	0		
Idle stop	375		(10,0-18,0)	
	420-480	0		
	1250	max. 2,0		
End stop	300	min. 50		
	420	max. 40		

2.4 Solenoid: max. cut-in voltage xxx min. 10 V
test voltage xxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	Maß K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 4,6
XL	20,2-22,2
B XL	9,5-12,8

Observations
*
Manifold-pressure compensator stroke = 3,5 mm
Correction at the adjusting nut. (46)

E15

E15

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 D 1

2. Edition

En

Testoil-ISO 4113

VE 4/10 F 2125 R 62-4 Overflow temperature 45° C

0 460 404 022

supersedes 11.82
company: Peugeot
engine: XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,0-5,4	mm	0,67	
1.2 Supply-pump pressure	1400	5,2-5,8	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	1250	48,7-49,7	cm³/1000 strokes	0,67	
Full-load delivery without charge-air pressure	500	33,5-34,5	cm³/1000 strokes	0	3,0
1.4 Idle regulation	425	8,0-12,0	cm³/1000 strokes	0	2,5
1.5 Full-speed regulation	2425	17,0-23,0	cm³/1000 strokes	0,67	
1.6 Start	100	min. 50	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1400	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,67 bar	n = rev/min	750	1400	2000
	mm	1,4-2,2(1,1-2,5)	(4,5-5,9)	7,8-8,6(7,5-8,9)
2.2 Supply pump LDA=0,67 bar	n = rev/min	400		2000
	bar (kgf/cm²)	2,1-2,7		7,1-7,7
Overflow delivery	n = rev/min	500		2125
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	5,0-11,0	(4,0-12,0)	0,67
	2425		(16,0-24,0)	0,67
	2000	41,8-44,2	(40,7-45,3)	0,67
	1250		(46,9-51,5)	0,67
	* 750	39,5-40,5	(37,7-42,3)	0,25
	500		(31,0-37,0)	0
switch-off	2125	0		
Idle stop	425		(6,0-14,0)	
	460-590	0		
End stop	300	min. 50		
	420	max. 40		

2.4 Solenoid	max. cut-in voltage	xxx min. 10 V
	test voltage	xxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	Maß K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max.4,5
AXK	20,2-22,2
BXL	9,5-12,8

Observations

* Manifold-pressure compensator stroke = 3,5 mm Correction at the adjusting nut. (46)

E16

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 BUK 1,5c

2. Edition

VE 3/10 F 1800 L 70

0 460 403 004

supersedes company Bukh engine DV 36 TME

Testoil-ISO 4113

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/ .

Pre-stroke setting 0,2 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1200	2,9- 3,3	mm	0,65	
1.2 Supply pump pressure	1200	5,1- 5,7	bar (kgf/cm²)	0,65	
1.3 Full-load delivery without charge-air pressure	600	31,0-33,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery with charge-air pressure	1200	45,0-47,0	cm³/1000 strokes	0,65	
1.4 Idle speed regulation	450	5,5- 9,5	cm³/1000 strokes	0	2,5(3,0)
1.5 Start	100	min. 35,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	1850	20,0-26,0	cm³/1000 strokes	0,65	
1.7 Load-dependent start of delivery	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	900	1200	1600
	mm	1,1-1,9(0,8-2,2)	(2,4-3,8)	5,0-5,8(4,7-6,1)
2.2 Supply pump	n = rev/min	200		1800
	bar (kgf/cm²)	0,8-1,4		8,0-8,5
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	max. 2000	1,0		0,65
	1900	2,0- 8,0	(1,0 - 9,0)	0,65
	1850		(19,0 -27,0)	0,65
	1800	43,2-43,3	(41,05-45,45)	0,65
	1200		(43,8 -48,2)	0,65
	+ 600	36,5-38,5	(34,5 -40,5)	0,27
	600		(29,0 -35,0)	0
switch-off	1800	0		
Idle stop	450		(3,5-11,5)	0
	480	min. 1,5		
	530	max. 1,5		0
End stop	450	min.38,0		
	580	max.36,0		

2.4 Solenoid — max. cut-in voltage xxx min 10,0 V; rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	-
KF	5,9- 6,1
MS	0,7- 0,9
SVS	max. 4,2
XK	20,2-22,2
XL	12,5-15,8

Observations

+ Manifold-pressure compensator stroke = 4,0 mm. Correction at the adjusting nut. (46)

4.84

E17

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

E17

⑥ # Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 Ope 1,6 d

4. Edition

supersedes: 9.83
company: Opel
engine: 2033-1,6 l

VE 4/9 F 2300 R 82

0 460 494 071

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply pump pressure	1500	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	450	6,0-10,0	cm³/1000 strokes		2,5
1.5 Start	100	min. 40,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2640	17,0-23,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	1500 **	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1200	1500	2300
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	6,8-7,6(6,5-7,9)
2.2 Supply pump	n = rev/min	600		2300
	bar (kgf/cm²)	2,4-3,0		7,3-7,9
Overflow delivery	n = rev/min	500		2300
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	3000	max. 5,0		
	2800	7,0-13,0	(6,0-14,0)	
	2640		(16,0-24,0)	
	2300	27,4-29,4	(26,1-30,7)	
	1500		(26,7-31,3)	
	600	23,2-26,2	(21,7-27,7)	
switch-off	2300	0		
Idle stop	1200	0		
	650	2,0-7,0	(0,5-8,5)	
	450		(4,0-12,0)	
End stop	400	min. 30		
	500	max. 28		

2.4 Solenoid	
max. cut-in voltage	xxx min. 10 V
test voltage	xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,0
* FM	1,8-2,4
AXK	24,2-26,2
BXL	9,9-13,2

Observations

* operating stroke (KSB)
**As of FD 349 (9.83) no setting of load-dependent start of delivery point.

2.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Testprüfung

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 v 3

3. Edition

En

VE 4/9 F 1000 R 85-5

0 460 494 092

supersedes

company

engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	1,5- 1,9	mm		
1.2 Supply pump pressure	1000	3,1- 3,7	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1000	24,5- 25,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	-	-	cm³/1000 strokes		
1.5 Start	100	min. 35,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1100	12,0- 18,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000
	mm	0,3-1,1(0-1,4)	(1,0-2,4)
2.2 Supply pump	n = rev/min	600	
	bar (kgf/cm²)	2,2-2,8	
Overflow delivery	n = rev/min	600	1000
	cm³/10 s	55-138(40-153)	55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	1250	max. 3,0	
	1100	(11,0-19,0)	
	1000	(22,7-27,3)	
	600	17,5-20,5 (16,5-22,5)	
switch-off	1000	0	
Idle stop			
End stop	400	min. 14	
	500	max. 19,5	

2.4 Solenoid	cut-in voltage	xxx min.	10,0 V
	(x	Rated voltage	12,0 V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,5
+ FH	1,8-2,4
A XK	18,4-20,4
B XL	5,9- 8,3

Observations

+ operating stroke (cold-start accel.)

E19

E19

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 5,0d
2. Edition

En

VE 6/11 F 1150 R 92
0 460 416 020

supersedes
company: Steyr
engine: WD 611.85

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02(0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	5,3- 5,7	mm		
1.2 Supply pump pressure	1000	6,2- 6,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1100	65,0-66,0	cm³/1000 strokes		3,5
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	300	14,0-18,0	cm³/1000 strokes		3,5
1.5 Start	100	min. 65,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1200	24,5-30,5	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000	1150
	mm	1,6-2,4(1,3-2,7)	(4,8-6,2)	6,8-7,6(6,5-7,9)
2.2 Supply pump	n = rev/min	300		1150
	bar (kgf/cm²)	2,6-3,2		7,0-7,6
Overflow delivery	n = rev/min	500		1150
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1300	max. 1,0		
	1250	min. 1,5		
	1200		(23,0-32,0)	
	1100		(62,8-68,2)	
	800	61,0-63,0	(59,3-64,7)	
	500	57,5-60,5	(55,6-62,4)	
switch-off	1150	0		
Idle stop	300		(11,5-20,5)	
	350	min. 1,5		
	420	max. 1,0		
End stop	170	min. 65		
	250	max. 52		

2.4 Solenoid — max. cut-in voltage
test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,2-5,4
MS	1,3-1,5
SVS	max.6,0
XK	20,2-22,2
B XL	10,5-13,8

Observations

04.84

E20

E20

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0 e
5. Edition
En

VE 4/9 F 2400 R 95
0 460 494 105
DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes 10.83
company: Renault
engine: F 8 M

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/.

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,1-4,5	mm		
1.2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	27,8-28,8	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	–	–	cm³/1000 strokes		
1.4 Idle regulation	425	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2650	10,5-16,5	cm³/1000 strokes		
1.6 Start	100	min. 42,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1400	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	Siehe Blatt 2	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,5-3,1	2400 7,7-8,3
Overflow delivery	n = rev/min cm³/10 s	600 55-138 (40-153)	2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 6,0		
	2650		(9,5-17,5)	
	2500	21,0-29,0	(21,0-29,0)	
	2400	29,2-31,8	(28,2-32,8)	
	2100	29,9-32,3	(28,8-33,4)	
	1400	27,5-29,5	(26,2-30,8)	
	1000		(26,0-30,6)	
	600	25,7-28,7	(24,2-30,2)	
switch-off	2400	0		
Idle stop	650	0		
	600	0,2-5,2		
	425		(4,0-12,0)	
End stop	330	min. 30,0		
	500	max. 29,0		

2.4 Solenoid: max. cut-in voltage xxxx min. 10,0 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	2,8
A K	18,7-20,7
B L	9,5-12,8

Observations

Please note instructions on sheet 2

2.1 Timing device

n = min/1	mm
600	0,7-1,5 (0,4-1,8)
1000	2,3-3,1 (2,0-3,4)
1400	(3,6-5,0)
2000	6,3-7,1 (6,0-7,4)
2100	6,7-7,5 (6,4-7,8)
2400	7,0-7,7 (6,6-8,0)

Testing the hydr. cold-start accelerator:

Apply 12 V to expansion element of hydr. cold-start accelerator.
At 300 1/min there must be a timing-device travel of 1.3 - 3.3 mm.

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 BMW 2,4 a

1. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 R 121
0 460 406 022
DHK: 1 688 901 022 / 130 bar

Test pressure line
6x2x450 mm / 1 680 750 073
Overflow temperature 45° C

supersedes –
company BMW
engine: M 21 D 24-Europa

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/.

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3-4,7	mm	1,050	
1.2 Supply pump pressure	1500	6,1-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery without charge-air pressure	500	28,0-29,0	cm³/1000 strokes	0	3,0
Full-load delivery with charge-air pressure	1500	40,8-41,8	cm³/1000 strokes	1,050	2,5
1.4 Idle speed regulation	400	6,0-10,0	cm³/1000 strokes	0	3,0
1.5 Start	250	35,0-36,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	2600	17,5-23,5	cm³/1000 strokes	1,050	
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=1,050	n = rev/min	500		1000	1500	2300
	mm	(*)	1,1-1,9(0,8-2,2)	(*)	(3,8-5,2)	7,4-8,2(7,1-8,5)
2.2 Supply pump LDA=1,050	n = rev/min	500				2300
	bar (kgf/cm²)	3,2-3,6				8,1-8,5
Overflow delivery	n = rev/min	500				2400
	cm³/10 s	55-138(40-153)				55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	7,0-13,0	(6,0-14,0)	1,050
	2600		(16,5-24,5)	1,050
	2400	40,6-42,6	(39,4-43,8)	1,050
	1500		(39,1-43,5)	1,050
	** 750	34,5-35,5	(32,0-38,0)	0,250
	500		(25,5-31,5)	0
switch-off	2400	0		
Idle stop	400		(4,0-12,0)	
	475	max. 3,0		
End stop	100	26,5-36,5		
	400	31,5-41,5		
	480	25,2-29,8		

2.4 Solenoid

max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,3-6,6
MS	1,5-1,7
SVS	4,0
A	
B	

Observations
*operating stroke (KSB)

Please note instructions on sheet 2
**Correction at the adjusting nut. (46)

10.83

E23

E23

* Test hydr. cold-start accelerator:

Apply 12 V to magnet of hydr. cold-start accelerator.
500 1/min 1.9 - 2.9 (1.7-3.1)
1000 1/min 3.7 - 4.7 (3.5-4.9)

** Manifold-pressure compensator stroke = 4.3 mm

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3k 1
1. Edition

En

VE 4/9 F 2075 R 126-2 **Overflow temperature 45° C**
0 460 494 155
DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes -
company: Peugeot
engine: XD 3 S

Test 1130 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,8- 6,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,6- 6,2	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	500	42,8-43,8	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	54,5-55,5	cm³/1000 strokes	0,8	2,5(3,0)
1.4 Idle regulation	350	20,0-24,0	cm³/1000 strokes	0	2,0(3,0)
1.5 Full-speed regulation	2300	25,0-31,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 57,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	750	1000	1500	2000
LDA=0,8 bar	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	200	750	2000	
LDA=0,8 bar	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500		2075	
	cm³/10 s	55-138(40-153)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2600	max. 1,0	0,8
	2300	(24,0-32,0)	0,8
	2200	38,0-44,0(37,0-45,0)	0,8
	2000	53,0-55,0(51,7-56,3)	0,8
	1500	(52,7-57,3)	0,8
	1000	52,0-55,0(50,5-56,5)	0,8
	750*	48,7-49,7(46,2-52,2)	0,25
	500	(40,3-46,3)	0
switch-off elektr.	400	0	
Idle stop	500	max. 1,0	
	400	8,0-12,0(6,0-14,0)	
	350	(18,0-26,0)	
End stop	230	min. 60	
	330	max. 60	

2.4 Solenoid — max. cut-in voltage: xxx min 22,0 V
test voltage: xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	K1
KF	5,4- 5,7
MS	1,2- 1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. (46)
Pulling electro-magnet 24 V

03.84

F1
FA

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MWM 1,5 c
6. Edition

En

PES 2 A 75 D..RS1235,1252,1298 — EP/RSV 300-1000 A7C505 R
3 80 ..RS1236,1239,1299 — EP/RSV 300-1000 A7B505DR
4 ..RS1237,1246,1276,1301 — EP/RSV 325-1500 A2B505DR
** 6 ..RS1238,1302 — EP/RSV 325-1500 A2C505 R

supersedes 4.83
company MWM
engine D 208-, D 308-, D 225-, D 325-, D 226-, D 327- 2..6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery "C" and "D" cm³/100 strokes 3 7,5 Ø	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery "C" and "D" cm³/100 strokes 3 8 Ø	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2 - 6,6	0,4	9	4,1-4,5	
	9	3,2 - 3,7		6	1,2-2,0	
200	9	2,1 - 2,8		9	2,7-3,7	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

300 - 1000

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	1000	16,0	without auxiliary spring	ca.25	300	7,0	-	-
	1050	8,5			100	min.19,5		
	1100	2,4			300	7,4-7,6		
ca.67 (2a)	1030	8,0-9,0	with auxiliary spring		390-	450=2,0		
	1070	2,0-4,0						
	1120	0,3-1,0						

The numbers denote the sequence of the tests

** As from FD 823 the idle auxiliary-spring has been changed from 1 424 641 000 to ... 001. New values enclosed.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
page 3 - 33 !								

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F2

F2

B. Governor Settings

325-1500

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.58	1500 1580 1630	16,0 9,0 4,2	without auxiliary spring			ca.16	325	7,0	-	-
							100 325 445	min.19,5 7,4-7,6 -505=2,0		
ca.56 (5)	1530 1580 1720	8,0-9,0 3,0-4,0 0,3-1,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
page 3 - 33!			(6a)					

Checking values in brackets

* 1 mm less control rod travel than col 2

The rating plate described on MWM 1.5 a has recently been modified to enable more precise adjustment on governors with torque control. The modification was carried out in columns n = engine speed and Q = (full-load quantity). Testing was extended to two speeds and two quantities.

Deviating from the instructions WPP 001/4, 1. Supplement "Adjustment of the governor and the pump", the following points now apply:

(2) Adjustment as per rating plate n = 1 (1st speed) and Q = (1st quantity; or according to columns 1 and 2.

(3) Adjustment is carried out until the control-rod travel changes, as read under (2), or (with the new rating plate) until the 2nd quantity is reached at the second speed; or as per columns 4 and 5.

(6) Is to be adjusted as per rating plate n = (1st speed + 20 min^{-1}); or as per column 3.

In the case of repairs to Fendt tractors on which the new rating plate hat not yet been attached (2nd speed and 2nd quantity), the full-load data applies, listed as per engine types; in accordance with the above instructions.

With new replacement pumps delivered from the Stuttgart warehouse, the spring retainer is not fitted! Order from MWM Co using the old rating plate.

Full-load data for Fendt tractors - Engine D 208/308

Only valid for engines with pumps PES 3 A 75 C 320/3 RS 1236 and 39
PES 4 A 75 C 320/3 RS 1237

(1A)

Testoil-ISO 4113

F3

C. Settings for Fuel Injection Pump with Fitted Governor

①

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
Fendt tractors - Output at speed - Engine and tractor type								
32 PS / 2100 min^{-1} - D 208 - 3 - Farmer 2 D -								
1050	36,0 - 37,0	1070	700	39,0 - 41,0				
32 PS / 1050 min^{-1} - D 308 - 3 - 231 GT -								
975	36,0 - 37,0	990	700	39,0 - 41,0				
38 PS / 2600 min^{-1} - D 208 - 3 - Farmer 2 -								
1300	35,0 - 36,0	1320	700	36,0 - 38,0				
55 PS / 2400 min^{-1} - D 208 - 4 - Farmer 4 S -								
1200	41,0 - 42,0	1220	700	42,0 - 44,0				
General fitting - Output at speed								
D 208 - 2								
F 31 PS / 3000 min^{-1}								
1500	41,5 - 43,5	1520						
B 30 PS / 3000 min^{-1}								
1500	39,5 - 41,5	1520						
A 28 PS / 3000 min^{-1}								
1500	41,5 - 43,5	1520						
F 30 PS / 2800 min^{-1}								
1400	41,5 - 43,5	1420						
B 29 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
A 27 PS / 2800 min^{-1}								
1400	41,5 - 43,5	1420						

Testöl ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 29 PS / 2600 min^{-1}								
1300	43,0 - 45,0	1320						
B 28 PS / 2600 min^{-1}								
1300	41,0 - 43,0	1320						
A 26 PS / 2600 min^{-1}								
1300	42,5 - 44,5	1320						
F 28 PS / 2500 min^{-1}								
1250	42,5 - 44,5	1270						
B 27 PS / 2500 min^{-1}								
1250	40,5 - 42,5	1270						
A 25 PS / 2500 min^{-1}								
1250	41,5 - 43,5	1270						
F 27 PS / 2400 min^{-1}								
1200	42,0 - 44,0	1220						
B 26 PS / 2400 min^{-1}								
1200	40,0 - 42,0	1220						
A 24 PS / 2400 min^{-1}								
1200	41,0 - 43,0	1220						
F 26 PS / 2300 min^{-1}								
1150	41,5 - 43,5	1170						
B 25 PS / 2300 min^{-1}								
1150	39,5 - 41,5	1170						
A 23 PS / 2300 min^{-1}								
1150	40,5 - 42,5	1170						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

F5

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 25 PS / 2200 min^{-1}								
1100	41,0 - 43,0	1120						
B 24 PS / 2200 min^{-1}								
1100	39,0 - 41,0	1120						
A 22 PS / 2200 min^{-1}								
1100	40,0 - 42,0	1120						
F 24 PS / 2100 min^{-1}								
1050	40,5 - 42,5	1060						
B 23 PS / 2100 min^{-1}								
1050	38,0 - 40,0	1060						
A 21 PS / 2100 min^{-1}								
1050	39,0 - 41,0	1060						
F 23 PS / 2000 min^{-1}								
1000	39,0 - 41,0	1010						
B 22 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
A 20 PS / 2000 min^{-1}								
1000	38,0 - 40,0	1010						
B 20 PS / 1800 min^{-1}								
900	36,0 - 38,0	910						
A 18 PS / 1800 min^{-1}								
900	36,5 - 38,5	910						
B 16 PS / 1500 min^{-1}								
750	34,0 - 36,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
A 15 PS / 1500 min^{-1}								
750	36,0 - 38,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 46,5 PS / 3000 min^{-1}								
1500	42,0 - 44,0	1520						
B 45 PS / 3000 min^{-1}								
1500	39,0 - 41,0	1520						
A 42 PS / 3000 min^{-1}								
1500	40,5 - 42,5	1520						
F 45 PS / 2800 min^{-1}								
1400	42,0 - 44,0	1420						
B 43,5 PS / 2800 min^{-1}								
1400	39,0 - 41,0	1420						
A 40,5 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
F 43,5 PS / 2600 min^{-1}								
1300	41,5 - 43,5	1320						
B 42 PS / 2600 min^{-1}								
1300	39,5 - 41,5	1320						
A 39 PS / 2600 min^{-1}								
1300	40,0 - 42,0	1320						
F 42 PS / 2500 min^{-1}								
1250	40,5 - 42,5	1270						
B 40,5 PS / 2500 min^{-1}								
1250	38,5 - 40,5	1270						
A 37,5 PS / 2500 min^{-1}								
1250	39,5 - 41,5	1270						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 40,5 PS / 2400 min^{-1}								
1200	40,5 - 42,5	1220						
B 39 PS / 2400 min^{-1}								
1200	38,5 - 40,5	1220						
A 36 PS / 2400 min^{-1}								
1200	39,5 - 41,5	1220						
F 39 PS / 2300 min^{-1}								
1150	39,5 - 41,5	1170						
B 37,5 PS / 2300 min^{-1}								
1150	38,0 - 40,0	1170						
A 34,5 PS / 2300 min^{-1}								
1150	38,0 - 40,0	1170						
F 37,5 PS / 2200 min^{-1}								
1100	38,5 - 40,5	1120						
B 36 PS / 2200 min^{-1}								
1100	36,5 - 38,5	1120						
A 33 PS / 2200 min^{-1}								
1100	38,0 - 40,0	1120						
F 36 PS / 2100 min^{-1}								
1050	38,0 - 40,0	1060						
B 34,5 PS / 2100 min^{-1}								
1050	36,0 - 38,0	1060						
A 31,5 PS / 2100 min^{-1}								
1050	36,0 - 38,0	1060						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 34,5 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
B 33 PS / 2000 min^{-1}								
1000	35,5 - 37,5	1010						
A 30 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
B 30 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
A 27 PS / 1800 min^{-1}								
900	35,0 - 37,0	910						
B 24 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						
A 22,5 PS / 1500 min^{-1}								
750	36,0 - 38,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 62 PS / 3000 min^{-1}								
1500	40,5 - 42,5	1520						
B 60 PS / 3000 min^{-1}								
1500	39,0 - 41,0	1520						
A 56 PS / 3000 min^{-1}								
1500	40,0 - 42,0	1520						
F 60 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
B 58 PS / 2800 min^{-1}								
1400	35,5 - 37,5	1420						
A 54 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
F 53 PS / 2600 min^{-1}								
1300	40,0 - 42,0	1320						
B 56 PS / 2600 min^{-1}								
1300	38,0 - 40,0	1320						
A 52 PS / 2600 min^{-1}								
1300	39,0 - 41,0	1320						
F 56 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						
B 54 PS / 2500 min^{-1}								
1250	37,5 - 39,5	1270						
A 50 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						

Testöl HSO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

F11

En

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 54 PS / 2400 min^{-1}								
1200	39,0 - 41,0	1220						
B 52 PS / 2400 min^{-1}								
1200	37,5 - 39,5	1220						
A 48 PS / 2400 min^{-1}								
1200	38,0 - 40,0	1220						
F 52 PS / 2300 min^{-1}								
1150	38,0 - 40,0	1170						
B 50 PS / 2300 min^{-1}								
1150	36,5 - 38,5	1170						
A 46 PS / 2300 min^{-1}								
1150	37,5 - 39,5	1170						
F 50 PS / 2200 min^{-1}								
1100	39,0 - 41,0	1120						
B 48 PS / 2200 min^{-1}								
1100	37,0 - 39,0	1120						
A 44 PS / 2200 min^{-1}								
1100	38,0 - 40,0	1120						
F 48 PS / 2100 min^{-1}								
1050	37,5 - 39,5	1060						
B 46 PS / 2100 min^{-1}								
1050	35,5 - 37,5	1060						
A 42 PS / 2100 min^{-1}								
1050	36,0 - 38,0	1060						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

F12

En F12

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 46 PS / 2000 min^{-1}								
1000	38,0 - 40,0	1010						
B 44 PS / 2000 min^{-1}								
1000	35,5 - 37,5	1010						
A 40 PS / 2000 min^{-1}								
1000	36,0 - 38,0	1010						
B 40 PS / 1800 min^{-1}								
900	34,5 - 36,5	910						
A 36 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
B 32 PS / 1500 min^{-1}								
750	30,5 - 32,5	760						
A 30 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 93 PS / 3000 min^{-1}								
1500	39,5 - 41,5	1520						
B 90 PS / 3000 min^{-1}								
1500	38,0 - 40,0	1520						
A 84 PS / 3000 min^{-1}								
1500	39,0 - 41,0	1520						
F 90 PS / 2800 min^{-1}								
1400	39,5 - 41,5	1420						
B 87 PS / 2800 min^{-1}								
1400	38,0 - 40,0	1420						
A 81 PS / 2800 min^{-1}								
1400	39,0 - 41,0	1420						
F 87 PS / 2600 min^{-1}								
1300	39,5 - 41,5	1320						
B 84 PS / 2600 min^{-1}								
1300	38,0 - 40,0	1320						
A 78 PS / 2600 min^{-1}								
1300	38,5 - 40,5	1320						
F 84 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						
B 81 PS / 2500 min^{-1}								
1250	37,0 - 39,0	1270						
A 75 PS / 2500 min^{-1}								
1250	38,0 - 40,0	1270						

Testoil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 81 PS / 2400 min^{-1}								
1200	38,0 - 40,0	1220						
B 78 PS / 2400 min^{-1}								
1200	36,5 - 38,5	1220						
A 72 PS / 2400 min^{-1}								
1200	38,0 - 40,0	1220						
F 78 PS / 2300 min^{-1}								
1150	38,0 - 40,0	1170						
B 75 PS / 2300 min^{-1}								
1150	36,5 - 38,5	1170						
A 69 PS / 2300 min^{-1}								
1150	37,0 - 39,0	1170						
F 75 PS / 2200 min^{-1}								
1100	38,0 - 40,0	1120						
B 72 PS / 2200 min^{-1}								
1100	36,0 - 38,0	1120						
A 66 PS / 2200 min^{-1}								
1100	37,0 - 39,0	1120						
F 72 PS / 2100 min^{-1}								
1050	37,0 - 39,0	1060						
B 69 PS / 2100 min^{-1}								
1050	35,5 - 37,5	1060						
A 63 PS / 2100 min^{-1}								
1050	36,0 - 38,0	1060						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 69 PS / 2000 min^{-1}								
1000	36,5 - 38,5	1010						
B 66 PS / 2000 min^{-1}								
1000	34,5 - 36,5	1010						
A 60 PS / 2000 min^{-1}								
1000	35,0 - 37,0	1010						
B 60 PS / 1800 min^{-1}								
900	33,5 - 35,5	910						
A 54 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
B 48 PS / 1500 min^{-1}								
750	31,0 - 33,0	760						
A 45 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

(1)

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation rev/min 3	Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point rev/min 6	cm³/1000 strokes 7	Intermediate rotational speed Torque-control travel rev/min 8	mm
B 35,5 PS / 3000 min^{-1}								
1500	55,0 - 57,0	1520	800	52,5 - 55,5				
A 32 PS / 3000 min^{-1}								
1500	51,0 - 53,0	1520						
F 41 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	55,5 - 58,5				
F 38,5 PS / 2500 min^{-1}								
1250	62,5 - 64,5	1270	800	55,5 - 58,5				
B 37 PS / 2500 min^{-1}								
1250	59,5 - 61,5	1270	800	52,5 - 55,5				
A 34 PS / 2500 min^{-1}								
1250	55,5 - 57,5	1270						
F 36,5 PS / 2300 min^{-1}								
1150	60,5 - 62,5	1170	800	55,5 - 58,5				
B 35 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	52,5 - 55,5				
A 32 PS / 2300 min^{-1}								
1150	53,0 - 55,0	1170						
F 33 PS / 2000 min^{-1}								
1000	58,5 - 60,5	1010	750	55,0 - 58,0				
B 31 PS / 2000 min^{-1}								
1000	55,0 - 57,0	1010	750	52,5 - 55,5				
A 28,5 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010						

Test[illegible]13

Checking values in brackets

* 1 mm less control rod travel than col. 2

F17

En

F12

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 28,5 PS / 1800 min^{-1}								
900	52,5 - 54,5	910	750	52,0 - 55,0				
A 26 PS / 1800 min^{-1}								
900	48,0 - 50,0	910						
B 24 PS / 1500 min^{-1}								
750	46,5 - 48,5	760	750	50,5 - 53,5				
A 22 PS / 1500 min^{-1}								
750	51,0 - 53,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 53 PS / 3000 min^{-1}								
1500	54,5 - 56,5	1520	800	51,0 - 54,0				
A 48 PS / 3000 min^{-1}								
1500	50,5 - 52,5	1520						
F 62 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	54,0 - 57,0				
F 58 PS / 2500 min^{-1}								
1250	62,5 - 64,5	1270	800	54,0 - 57,0				
B 56 PS / 2500 min^{-1}								
1250	59,5 - 61,5	1270	800	51,0 - 54,0				
A 51 PS / 2500 min^{-1}								
1250	54,5 - 56,5	1270						
F 55 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	54,0 - 57,0				
B 53 PS / 2300 min^{-1}								
1150	57,5 - 59,5	1170	800	51,0 - 54,0				
A 48 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 49,5 PS / 2000 min^{-1}								
1000	57,5 - 59,5	1010	750	54,0 - 57,0				
B 46,5 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	51,0 - 54,0				
A 43 PS / 2000 min^{-1}								
1000	48,5 - 50,5	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 43 PS / 1800 min^{-1}								
900	52,5 - 54,5	910	750	52,0 - 55,0				
A 39 PS / 1800 min^{-1}								
900	47,5 - 49,5	910						
B 36 PS / 1500 min^{-1}								
750	49,5 - 51,5	760	650	49,0 - 52,0				
A 33 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 71 PS / 3000 min^{-1}								
1500	54,5 - 56,5	1520	800	62,0 - 65,0				
A 64 PS / 3000 min^{-1}								
1500	49,5 - 51,5	1520						
F 83 PS / 2800 min^{-1}								
1400	65,5 - 67,5	1420	800	63,0 - 66,0				
F 78 PS / 2500 min^{-1}								
1250	61,5 - 63,5	1270	800	50,0 - 53,0				
B 74,5 PS / 2500 min^{-1}								
1250	58,5 - 60,5	1270	800	50,0 - 53,0				
A 68 PS / 2500 min^{-1}								
1250	53,5 - 55,5	1270						
F 73 PS / 2300 min^{-1}								
1150	60,5 - 62,5	1170	800	52,0 - 55,0				
B 71 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	50,0 - 53,0				
A 64 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 66 PS / 2000 min^{-1}								
1000	57,5 - 59,5	1010	750	52,0 - 55,0				
B 62,5 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	50,0 - 53,0				
A 57 PS / 2000 min^{-1}								
1000	48,5 - 50,5	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 57 PS / 1800 min^{-1}								
900	51,5 - 53,5	910	750	49,0 - 52,0				
A 52 PS / 1800 min^{-1}								
900	45,5 - 47,5	910						
B 48 PS / 1500 min^{-1}								
750	48,5 - 50,5	760	650	47,0 - 50,0				
A 44 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Testoil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 106 PS / 3000 min^{-1}								
1500	55,5 - 57,5	1520	800	50,0 - 53,0				
A 96 PS / 3000 min^{-1}								
1500	49,5 - 51,5	1520						
F 125 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	54,0 - 57,0				
F 117 PS / 2500 min^{-1}								
1250	61,5 - 63,5	1270	800	54,0 - 57,0				
B 112 PS / 2500 min^{-1}								
1250	58,5 - 60,5	1270	800	50,0 - 53,0				
A 102 PS / 2500 min^{-1}								
1250	53,5 - 55,5	1270						
F 110 PS / 2300 min^{-1}								
1150	59,5 - 61,5	1170	800	54,0 - 57,0				
B 106 PS / 2300 min^{-1}								
1150	56,5 - 58,5	1170	800	50,0 - 53,0				
A 96 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 99 PS / 2000 min^{-1}								
1000	56,5 - 58,5	1010	750	54,0 - 57,0				
B 94 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	50,0 - 53,0				
A 86 PS / 2000 min^{-1}								
1000	47,5 - 49,5	1010						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 86 PS / 1800 min^{-1}								
900	49,5 - 51,5	910	750	53,0 - 56,0				
A 78 PS / 1800 min^{-1}								
900	46,5 - 48,5	910						
B 72 PS / 1500 min^{-1}								
750	49,5 - 51,5	760	650	47,0 - 50,0				
A 66 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Test of ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

F24

En

F24

C. Settings for Fuel Injection Pump with Fitted Governor

Engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 33 PS / 2800 min^{-1}								
1400	51,5 - 53,5	1420	800	46,0 - 49,0				
F 32 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	46,0 - 49,0				
B 31 PS / 2500 min^{-1}								
1250	49,5 - 51,5	1270	800	44,0 - 47,0				
A 28 PS / 2500 min^{-1}								
1250	49,5 - 51,5	1270						
F 30 PS / 2300 min^{-1}								
1150	48,5 - 50,5	1170	800	46,0 - 49,0				
B 28,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 26 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 26 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 25 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 23 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 21 PS / 1800 min^{-1}								
900	41,5 - 43,5	910						
A 17 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

G1

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 50 PS / 2800 min^{-1}								
1400	48,5 - 50,5	1420	800	46,0 - 49,0				
F 48,5 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 46,5 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	43,0 - 46,0				
A 42 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 46 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 44 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	43,0 - 46,0				
A 40 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 40 PS / 2000 min^{-1}								
1000	44,5 - 46,5	1010	800	46,0 - 49,0				
B 38,5 PS / 2000 min^{-1}								
1000	42,5 - 44,5	1010	800	43,0 - 46,0				
A 35 PS / 2000 min^{-1}								
1000	42,5 - 44,5	1010						
A 31,5 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 26 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Test oil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

G2

En G2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 68 PS / 2800 min^{-1}								
1400	49,5 - 51,5	1420	800	46,0 - 49,0				
F 66 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 63 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	44,0 - 47,0				
A 57,5 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 61 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 58,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 53,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 53 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 51 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 46,5 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 42 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 35 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

(1)

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm
F 102 PS / 2800 min^{-1}								
1400	49,5 - 51,5	1420	800	46,0 - 49,0				
F 99 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 95 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	44,0 - 47,0				
A 86 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 92 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 88 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 80 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 80 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 77 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 70 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 63 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 52,5 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Testoil ISO 4113

G4

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 48 PS / 3000 min^{-1}								
1500	47,0 - 49,0	1520	800	49,5 - 52,5				
A 43,5 PS / 3000 min^{-1}								
1500	44,0 - 46,0	1520						
F 55 PS / 2800 min^{-1}								
1400	53,5 - 55,5	1420	800	52,5 - 55,5				
F 53 PS / 2500 min^{-1}								
1250	55,5 - 57,5	1270	800	52,5 - 55,5				
B 50 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	49,5 - 52,5				
A 46,5 PS / 2500 min^{-1}								
1250	48,0 - 50,0	1270						
F 50 PS / 2300 min^{-1}								
1150	56,0 - 58,0	1170	800	51,0 - 54,0				
B 48,5 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170	800	49,5 - 52,5				
A 44 PS / 2300 min^{-1}								
1150	47,0 - 49,0	1170						
F 46 PS / 2000 min^{-1}								
1000	54,0 - 56,0	1010	750	52,5 - 55,5				
B 44 PS / 2000 min^{-1}								
1000	50,5 - 52,5	1010	750	50,0 - 53,0				
A 40 PS / 2000 min^{-1}								
1000	46,0 - 48,0	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 40 PS / 1800 min^{-1}								
900	49,5 - 51,5	910	750	50,0 - 53,0				
A 36,5 PS / 1800 min^{-1}								
900	45,0 - 47,0	910						
B 33,5 PS / 1500 min^{-1}								
750	47,5 - 49,5	760						
A 30,5 PS / 1500 min^{-1}								
750	43,5 - 45,5	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 64 PS / 3000 min^{-1}								
1500	47,5 - 49,5	1520	800	49,0 - 52,0				
A 58 PS / 3000 min^{-1}								
1500	44,0 - 46,0	1520						
F 74 PS / 2800 min^{-1}								
1400	53,5 - 55,5	1420	800	52,0 - 55,0				
F 70,5 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	52,0 - 55,0				
B 67 PS / 2500 min^{-1}								
1250	49,0 - 51,0	1270	800	49,0 - 52,0				
A 61 PS / 2500 min^{-1}								
1250	44,5 - 46,5	1270						
F 67 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170	800	52,0 - 55,0				
B 64,5 PS / 2300 min^{-1}								
1150	49,0 - 51,0	1170	800	49,0 - 52,0				
A 58,5 PS / 2300 min^{-1}								
1150	44,5 - 46,5	1170						
F 61 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010	750	49,5 - 52,5				
B 58,5 PS / 2000 min^{-1}								
1000	48,0 - 50,0	1010	750	49,5 - 52,5				
A 53 PS / 2000 min^{-1}								
1000	44,0 - 46,0	1010						

Testoil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 53 PS / 1800 min^{-1}								
900	47,0 - 49,0	910	750	49,5 - 52,5				
A 49 PS / 1800 min^{-1}								
900	43,0 - 45,0	910						
B 44,5 PS / 1500 min^{-1}								
750	47,0 - 49,0	760						
A 41 PS / 1500 min^{-1}								
760	43,0 - 45,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 96 PS / 3000 min^{-1}								
1500	51,5 - 53,5	1520	800	50,0 - 53,0				
A 87 PS / 3000 min^{-1}								
1500	47,5 - 49,5	1520						
F 112 PS / 2800 min^{-1}								
1400	58,0 - 60,0	1420	800	53,0 - 56,0				
F 106 PS / 2500 min^{-1}								
1250	57,5 - 59,5	1270	800	53,0 - 56,0				
B 101 PS / 2500 min^{-1}								
1250	54,0 - 56,0	1270	800	50,0 - 53,0				
A 92 PS / 2500 min^{-1}								
1250	49,0 - 51,0	1270						
F 101 PS / 2300 min^{-1}								
1150	57,5 - 59,5	1170	800	53,0 - 56,0				
B 97 PS / 2300 min^{-1}								
1150	55,0 - 57,0	1170	800	50,0 - 53,0				
A 88 PS / 2300 min^{-1}								
1150	50,0 - 52,0	1170						
F 92 PS / 2000 min^{-1}								
1000	52,5 - 54,5	1010	750	50,0 - 53,0				
B 88 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010	750	50,0 - 53,0				
A 80 PS / 2000 min^{-1}								
1000	45,5 - 47,5	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 80 PS / 1800 min^{-1}								
900	50,0 - 52,0	910	750	50,0 - 53,0				
A 73 PS / 1800 min^{-1}								
900	45,5 - 47,5	910						
B 67 PS / 1500 min^{-1}								
750	50,0 - 52,0	760	650	52,0 - 55,0				
A 61 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Testoil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

40

(1A)

WPP 001/4 HOR 1,3 c
2. Edition

En

PES 2 A 65 D 410/3 RS 1273
Komb.-Nr. 0 400 462 049

RSV 400-1225 A 1 B 1091 DL
A 1 C 1091 DL

supersedes 12.77
company Holder
engine VD 2

1 - 2
0 -90° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 (1,85-2,05) mm (from BDC) RW = 4,5 - 7,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1225	10,8+0,1	4,0-4,1	0,2 (0,3)			
400	7,7-7,9	1,0-1,6	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	400	7,3	1225	10,8-10,9
	x =	4,75					100	min. 19,0	1000	11,1-11,3
ca. 66	9,8	1265-1275					400	7,7 - 7,9	500	11,4-11,5
(2a)	4,0	1295-1325					560 - 700	620 = 2,0 max. 1,0		
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1225	40,0 - 41,0 (39,0 - 42,0)	1265-1275*	1000	39,5-41,5 (38,5-42,5)	100	66,0-76,0 (63,0-79,0) = 19,5 - 21,0 mm RW	400	7,8
			500	37,0-39,0 (35,5-40,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

G11

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 HOR 2,0 a 1
1. Edition

En

PES 3 A 65 D 410/3 RS 1274 EP/RSV 400-1225 A1B 1042L
Komb.-Nr. 0 400 463 117
1 - 2 - 3 je 120° ± 0,5° (± 0,75°)

supersedes -
company Holder
engine VD 3

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0 (1,85- 2,05) mm (from BDC) RW = 6,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1225	10,8+0,1	4,2 - 4,3	0,2 (0,3)			
400	7,7-7,9	1,0 - 1,6	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x =	0,3-1,0	-	-	-	ca. 24	400	5,8	-	-
							100	min. 19,0		
ca. 64	9,8	1265-1275					400	6,2 - 6,4		
(2a)	4,0	1295-1325					539-590	= 2,0		
	1450	0,3-1,7					700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1225	42,0 - 43,0 (41,0 - 44,0)	1265-1275*	-	-	100	55,0-70,0 = 19,0 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

542

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 5,9 b
3. Edition
En

Testoil-ISO 4113

PES 6 A 80 D 320 RS 1280 RSV 300-1150 A0B 2001 DR

Komb.-Nr. 0 400 476 071
1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 12.81
company Eicher
engine EDK 6-4 Saugmotor
77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1130	8,9-9,0	5,1 - 5,2	0,2(0,35)			
300	6,1-6,3	0,7 - 1,3	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	300	5,7	1130	8,9-9,0
	X =	6,0					100	min.19,5	795	9,2-9,4
ca. 53 (5)	1170-1180=7,9						300	6,1-6,3	500	9,5-9,6
	1215-1245=4,0						420 -480=	2,0		
	1380=	0,3-1,7					650	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1130	51,5 - 52,5 (50,0 - 54,0)	170-1180*	900	48,5 - 51,5 (47,0 - 53,0)	100	16,3-16,9 mm HW	300	6,2
			500	46,5 - 48,5 (45,0 - 50,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50. Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

G13

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 HOR 2, 9b
2. Edition

En

Testoil-ISO 4113

PES 3 A 80 D 410/3 RS1313 EP/RSV 400-1250 A0 B 1123 L
A 0 C 1123 L

supersedes 2.82
company Holder
engine VD 310-8
36 kW

Komb.-Nr. 0 400 463 136

1 - 2 - 3
0 - 120 - 240° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) RW 9 Port closing difference between control-rod travel 9 and max. 9,0-9,9°

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,4-9,5	5,6 - 5,7	0,2(0,35)			
400	6,4-6,6	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 20	400	6,3	-	-
	x	= 4,0					100	min.19,5		
ca.49 (2a)	8,4	1290-1300					400	6,7-6,9		
	4,0	1315-1345					510-570	= 2,0		
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	56,5 - 57,5 (55,0 - 59,0)	1290-1300*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

G14

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MAN 9,7 o2
1. Edition
En

PES 6 A 95 D 410 RS 2108 EP/RSV 250-1100 A 1 B 692 D

supersedes –
company MAN
engine D 2156 HM 6 HKD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 -1,8 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	7,5-8,0	0,5			
200	6,0 6,0	3,2-4,2 0,5-1,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.59	1100 1150 1200	16,0 11,5 6,3		ca. 23	250	7,5	1080	0
	1160	9,0-12,0	without auxoliary spring		100	19 - 21	900	0,2 - 0,4
(2a)	1200 1350	4,6- 7,9 0,3- 1,0	with auxiliary spring		250 400 650	7,2- 7,8 3,5- 5,3 0 - 1,0	500	0,4 - 0,6

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	110,0 - 112,0 (109,0 - 113,0)	1140-1155*	700	110,0 - 113,0 (109,0 - 114,0)	100	17,7-18,3 mm RW	250	7,5
			500	max. 114,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 MAN 9,7 o3
1. Edition
En

PES 6 A 95 D 410 RS 2108 RSV 250-1100 A1 B 734 L
Komb.-Nr. 0 400 876 220 A1 C 734 L

supersedes
company MAN
engine D 2356 HM 5 H

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 -1,8 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	7,5-8,0	0,5			
	6,0	3,2-4,2				
200	6,0	0,5-1,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca. 57	1100	16,0	-	ca.22	250	6,2	1080	0
	1160	8,8						
	1200	4,0			100	19 - 21	300	1,0 - 1,6
	1160	8,3-11,0	without auxoliary spring		250	5,8- 6,5		
(2a)	1200	2,9- 5,7			400	0 - 2,3		
	1320	0,3- 1,0	with auxiliary spring		500	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	111,5-113,5 (110,5-114,5)	1130-1145*	-	-	100	18,2-18,8 mm RW	250	6,2

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 MAN 9,7 o1
1. Edition
En

PES 6 A 95 D 410 RS 2108 W EP/RSV 250-1100 A 1 B 1071

supersedes
company MAN
engine D 2156 HMN 5 D

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 -1,8 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	7,5 - 8,0	0,5			
	6,0	3,2 - 4,2				
200	6,0	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
Ca. 59	1100	16,0		ca. 25	250	6,0	1100	0
	1150	11,4			100	19 - 21	300	1,2 - 1,8
	1190	6,0	without auxoliary spring		250	5,7 - 6,3		
	1160	8,0-11,0			350	1,7 - 3,6		
(2a)	1250	1,3-3,2						
	1350	0,3-1,0	with auxiliary spring		450	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	120,5-123,5 (119,5-124,5)	1140-1155*	500	max. 118,5	100	min. 18,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MAN 9,7 o
2. Edition
En

PES 6 A 95 D 410 RS 2108 Y EP/RSV 250-1100 A1 B 1071

supersedes 8.74
company MAN
engine D 2156 HMN 6 D

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 (1,65- 1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	7,5-8,0	0,5			
	6,0	3,2-4,2				
200	6,0	0,5-1,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 59	1100	16,0		ca. 25	250	6,0	1100	0
	1150	11,4			100	19 - 21	300	1,2 - 1,8
	1190	6,0	without auxoliary spring					
	1160	8,0-11,0			250	5,7- 6,3		
	1250	1,3- 3,2			350	1,7- 3,6		
(2a)	1350	0,3- 1,0	with auxiliary spring		450	0 -1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	108,5-110,5 (107,5-111,5)	1140-1155*	500	max. 104,0	100	min. 18,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

G18

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 6,1 a

5. Edition

En

Testoil-ISO 4113

PES 6 A 85 D 410/3 RS 2366 EP/RSV 325-1400 A8B674D, 707 D
325-1150 A8B674D, 707 D
RS 2415
RS 2532

supersedes 1.84
company K H D
engine BF 6 L 913

Instructions P.3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4			
	6	0,6 - 1,4				
200	9	1,4 - 2,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

EP/RSV 325-1400 A8B674D, 707D

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate-rated-speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 69	1400	16,0				ca. 20	325	5,5	1400	0
	1450	10,5					200	19 - 21		
	1500	4,0	without auxoliary spring				325	5,2-5,8		
ca. 68 (5)	1400	ca. 10,0					500	1,2-3,3	500	1,2-1,4
	1510	ca. 4,0					650	0 - 1,5		
	1600	0,3 -1,5	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat.: Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar				
	Instructions P. 3				100	119,5-129,5	325	5,5**
			LDA 500	0 bar 57,5-59,5				
(Increase by ± 1,0 cm³)								./.

Checking values in brackets

** 1 mm less control rod travel than col. 2

4.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

B. Governor Settings

EP/RSV 325-1150 A8B674D, 707 D

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 56	1150	16,0				ca. 21	325	5,5	1130	0
	1200	11,1								
	1250	5,4	without auxoliary spring				200	19 - 21		
							325	5,5-5,8	500	1,0-1,2
							500	1,4-3,4		
(2a)	1220	7,5-10,4					660	0 -1,5		
	1300	1,3-3,6	with auxiliary spring							
	1380	0,3-1,5								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar	100	119,5-129,5	325	5,5**
		Instructions P.3						
			LDA	0 bar				
			500	57,5-59,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / ~~increasing~~ pressure – in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel- diminution: mm	~~distance~~
all governors	0,38	0,10	0,2 - 0,3	
			1,6 - 2,0	

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

510

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

BF 6 L 913 - PES 6 A D..RS2366, 2415 - F or B output at .. min^{-1}

1400	88,0 - 90,0	1420	800	80,0 - 83,0	160 PS	/	n = 2800
1400	84,0 - 86,0	1420	800	66,0 - 69,0	142 PS	/	n = 2800
1325	90,5 - 92,5	1340	850	88,5 - 90,5	168 PS	/	n = 2650
1325	87,5 - 89,5	1340	800	82,5 - 85,5	160 PS	/	n = 2650
1325	82,5 - 84,5	1340	800	67,5 - 70,5	140 PS	/	n = 2650
1250	87,0 - 89,0	1270	800	84,5 - 87,5	160 PS	/	n = 2500
1250	83,0 - 85,0	1270	800	77,5 - 80,5	148 PS	/	n = 2500
1250	81,0 - 83,0	1270	800	75,5 - 77,5	140 PS	/	n = 2500
1200	86,0 - 88,0	1220	800	84,5 - 87,5	156 PS	/	n = 2400
1200	78,0 - 80,0	1220	800	68,0 - 71,0	135 PS	/	n = 2400
1165	84,0 - 86,0	1180	800	84,5 - 87,5	152 PS	/	n = 2330
1150	83,5 - 85,5	1165	800	84,5 - 87,5	152 PS	/	n = 2300
1150	80,0 - 82,0	1165	800	79,0 - 81,0	142 PS	/	n = 2300
1100	82,0 - 84,0	1115	800	84,5 - 87,5	147 PS	/	n = 2200
1075	82,0 - 84,0	1090	800	84,5 - 87,5	144 PS	/	n = 2150
1075	78,0 - 80,0	1090	800	76,0 - 79,0	136 PS	/	n = 2150
1050	76,5 - 78,5	1065	800	73,5 - 76,5	130 PS	/	n = 2100
1000	82,5 - 84,5	1015	800	84,5 - 87,5	137 PS	/	n = 2000
1000	77,0 - 79,0	1015	800	79,5 - 82,5	130 PS	/	n = 2000
900	82,0 - 84,0	910	800	84,5 - 87,5	125 PS	/	n = 1800
875	68,0 - 70,0	885	800	66,0 - 69,0	106 PS	/	n = 1750
750	85,0 - 87,0	760	-	-	105 PS	/	n = 1500
750	78,0 - 80,0	760	-	-	100 PS	/	n = 1500

Testoil ISO 4113

Please note

1. ** With Liebherr excavators: single-lever control, therefore use shorter screw 1 423 400 031 and set this at 0.3 - 1.0 before the stop.

2. LDA adjustment to be carried out according to VDT-W-420/305.

3. Dimension H = 22.5 mm = basic setting of LDA.

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FOR 4,2 d 1
1. Edition
En

PES 6 A 85 D 210 RS 2379 Z RSV 550 - 1150 A 5 B 737 L
Komb.-Nr. 0 400 866 068

supersedes -
company Ford England
engine 360 CID

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 -2,6 (2,45-2,65) mm (from BDC) RW=9 mm,

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	8,8 - 8,9	5,2 - 5,3	0,3 (0,45)			
550	6,5 - 6,7	1,3 - 1,7	0,25(0,4)			

POrt closing difference between control.rod travel 9 mm and max. = 4 - 5° camshaft

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x = 4,25	0,3-1,0	-	-	-	ca. 28	550	6,6		
							550	6,5-6,7		
ca. 51 (2a)	7,8	1190-1200						**		
	4,0	1225-1250								
	1410	0,3 - 1,7								

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2 mm control-rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
100	52,0 - 53,0 (50,0 - 55,0)	1190-1200	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

G22

Test Specifications Fuel Injection Pumps and Governors ②

VDT-WPP 001/4 MAN 9,2 a

5. Edition

En

PES 5 A 95 D 410 LS 2426 Z — RQ 250/1150 AB 839 DL

.. LS 2426, Z — RQV 250-1150 AB 850 DL

supersedes 6.82

company MAN

engine D 2555.. MX/MXF-192 PS M/MH - Z - 168 PS

1 - 3 - 5 - 4 - 2 je 72° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,3 -1,4 (1,25-1,45) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/ 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

2426 Z mit 839 D

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1170	15,0-15,4	540	0	150	6,6-8,1	880	15,8-16,0
				1200	10,0-14,4			250	4,5-6,7	1020	14,4-15,6
				1250	0 - 9			350	1,5-4,9		
				1320	0			440	0	1000	15,3-15,4

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation. At 1190 - 1205 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
2426 Z		-				
1150	100,5 - 102,5 (98,5 - 104,5)		800	104,0 - 107,0 (102,0 - 109,0)	100	146,5-156,5 =15,7- 16,3 mm RW
			500	max. 103,5 (max. 105,5)		

Checking values in brackets

3.84

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1170 1220 1280 1350	14,4-17,4 9,0-14,0 1,0- 7,8 0	-	-	-	ca. 13 (3a)	50 150 250 350 410	7,7-11,0 6,6- 9,8 4,2- 7,2 0 - 3,4 0	200 480 800 1180	0,5-1,2 3,2-4,0 5,0-5,4 8,4

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	114,5-116,5 (112,5-118,5)	1190-1205*	800 500	114,0-117,0 (112,0-119,0) max. 113,5 (max. 115,5	100 250	146,5 - 156,5 7 mm RW Change-over point 180-100 min^{-1}	1100 500	0 0,3-0,5

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1170 1120 1280 1350	14,4-17,4 9,0-14,0 1,0- 7,8 0	-	-	-	ca. 15 (3a)	50 150 250 350 410	7,7-11,0 6,6- 9,8 4,2- 7,2 0 - 3,4 0	200 480 800 1180	0,5-1,2 3,2-4,0 5,0-4,4 8,4

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	109,5-111,5 (107,5-113,5)	1190-1205*	800 500	112,0-115,0 (110,0-117,0 max. 112,5 (max. 114,5)	100 250	146,5-156,5 = 15,7- 16,3 mm RW 7 mm RW Change-over point 180-100 min^{-1}	1100 500	0 0,3-0,5

Checking values in brackets

* 1 mm less control rod travel than col 2

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

En

WPP 001/4 KHD 6,1 i
4. Edition

supersedes 1.83
company KHD
engine: BF 6 L 913 T
96 KW bei 2500 min^{-1}

PES 6 A 85 D 410/3 RS 2415
Komb.-Nr. 0 400 836 023

RQV 300-1250 AB 1131 L

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,0+0,1	7,8 - 7,9	0,3(0,45)			
300	8,4-8,6	1,0 - 1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) / rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1385	15,2-17,8	-	-	-	ca. 17	100	min. 10,0	250	0,9-1,1
ca. 65	11,0	1290-1300					300	8,4-8,6	580	3,9-4,1
	4,0	1415-1445					645-705	=2,0	920	5,4-5,6
	1525	0-1,0				450-550 (3a)			1250	7,8

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed (2b) limitation intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1250	78,0-79,0 (76,0-81,0)	1290-1300*	600	71,5-73,5 (69,0-76,0)	100	105,0-115,0 (102,0-118,0) =17,4- 17,8 mm RW	1250 600 850	12,0+0,1 12,8+0,1 12,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

H1

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 i
1. Edition

En

PE12 A 95D 610 LS 2453 RQV 300-1150 AB 1086 L
Komb.-Nr. 0 400 640 105
1- 4- 9- 8- 5- 2- 11- 10- 3- 6- 7- 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

supersedes
company KHD
engine F 12 L 413 F
247 kW/2300 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test data

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 -2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,7-8,8	8,2 - 8,4	0,3(0,6)			
300	5,9-6,1	1,3 - 1,9	0,7(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a / 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 23	100	min. 7,5	250 550	0,3-0,5 2,5-2,7
ca. 60	7,7 4,0 1350	1190-1200 1225-1255 0-1,0				450-520 ③a	300	5,9-6,1	850 1150	4,5-4,7 7,8

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a: rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤: rev/min 8	Control rod travel mm 9
1150	81,5-83,5 (79,5-85,5)	1190-1200*	800	89,0-92,0 (87,0-94,0)	100	120,0-130,0 (117,0-133,0)	1150 400 800 1000	8,7-8,8 9,6-9,7 9,6-9,7 9,3-9,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

BOSCH
Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

H2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 m
2. Edition

En

PE 12 A 95 D 610 LS 2453 RQV 300-900 AB 1090 L
Komb.-Nr. 0 400 640 108

superseded 3.83
company: KHD
engine: F 12 L 413 FW
177 kW (240 PS)
1800 min^{-1}

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	9,2-9,3	7,2 - 7,4	0,35(0,6)			
300	5,9-6,1	1,0 - 1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	925	15,2-17,8 (1a)	-	-	-	ca. 24	100	min.7,5	250	0,5-0,7
ca. 59	7,4	940- 950					300	5,9-6,1	470	4,0-5,2
	4,0	980-1010					345-405	= 2,0	680	6,2-6,5
	1100	0 - 1,0				(3a)			900	8,2

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
600	72,0-74,0 (70,0-76,0)	940-950*	750	80,5-83,5 (78,0-86,0)	100	19,0-21,0 mm RW	900	8,4+0,1
							500	9,2+0,1
			850	72,5-75,5 (70,0-78,0)			710	8,9+0,2
							835	8,5+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

H3

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 4,1 c 2

2. Edition

En

supersedes 11.83

company KHD

engine F 4 L 913

Road-building machine
59 kW/2500 min⁻¹

PES 4 A 80 D 410/3 RS 2523 RSV 325-1250 A 8 B 540-1 L

Komb.-Nr. 0 400 864 058

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,6+0,1	6,9-7,0	0,25(0,4)			
325	8,2-8,4	1,0-1,6	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 X= 4,0		-	-	-	ca.17	325	6,5	1250	11,6-11,7
							100	min.19,5	500	12,1-12,2
							325	6,9-7,1	965	11,8-12,0
ca.56 (2a)	10,6 1290-1300 4,0 1390-1420 1555 0,3-1,7						630-690 = 2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	68,5-69,5 (67,0-71,0)	1290-1300*	800	64,5-66,5 (62,5-68,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.84

H4

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H4

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 KHD 6,1 d

3. Edition

En

PES 6 A 80 D410/3 RS2527 EP/RSV 325-1150 A8 B2014DL

Komb.-Nr. 0 400 866 084

supersedes 3.84
company KHD
engine F6 L912
74kW (102PS)
/ 2300min-1
tractor DX 110-
S 31

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1150	11,8	5,6 - 5,7	0,2(0,35)			
325	+0,1 8,9-9,1	0,8 - 1,2	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.23	325	8,5	1150	11,8+0,1
									950	12,0+0,2
							100	min.19,5	775	12,5+0,2
ca.58	10,8	1190-1200					325	8,9-9,1	450	12,5+0,2
(2a)	4,0	1235-1265					390-450	= 2,0		
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	56,0 - 57,0 (54,5 - 58,5)	1190-1200*	775	54,0-56,0 (52,0-58,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.84

H5

H5

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 v 11
3. Edition
En

PES 6 A 90 D 410 RS 2596 RSV 350-1400 AOB 1141 L
Komb.-Nr. 0 400 876 293

supersedes 6.83
company Daimler-Benz
engine OM 352 A
123 kW (157 PS) (1)
Schmidt rotary (2)
snow plough for high altitudes

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1380	11,7+0,1	7,2-7,3	0,3(0,45)	9,8-9,9	5,4-5,6	
350	7,9-8,1	0,8-1,4	0,2(0,4)	7,9-8,1	0,8-1,4	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	max.14				
	x =	6,0					100	min.16,0		
							350	7,9-8,1		
ca.64	10,7	1420-1430					580-640	= 2,0		
(2a)	4,0	1520-1550								
	1680	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
LDA 1380	(1) 0,7 bar 72,0-73,0 (70,0-75,0)	1420-1430*	LDA 600	0,7 bar 68,0-71,0 (65,5-73,5)	100	78,0-88,0 (75,0-91,0) = 16,3 - 16,7 mm RW	-	-
			LDA 500	0 bar 48,5-49,5 (46,5-51,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.31	350	8,0	1200	9,8-10,0
	x =	6,0					100	19,0-21,0	650	11,3-11,5
							350	7,9- 8,1		
ca. 74	8,8	1440-1450					440-490	= 2,0		
(2a)	4,0	1470-1500					600	0,3- 1,0		
	1635	0,3-1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note. changed to .)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min (2)	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1440-1450*	LDA	0,7 bar	100	78,0-88,0	-	-
1380	54,5-56,5		1000	60,2-62,2		/ 16,4-		
	(52,5-58,5)			(58,2-64,2)		16,8 mmRW		
			600	65,2-67,2				
				(63,2-69,2)				
			LDA	0 bar				
			500	53,0-55,0				
				(51,0-57,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 A RS 2596		0,70	12,8 - 12,9
		0	11,2 - 11,3
(1)	0,40		12,5 - 12,6
		0,21	11,8 - 12,0
		0,70	12,3 - 12,4
(2)		0	10,4 - 11,5
	0,52		12,0 - 12,1
		0,21	10,8 - 11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En Testing the hydraulic start-locking device

Locking at 0,45 - 0,55 bar
Unlocking at 0,25 - 0,35 bar

H7

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 o
3. Edition
En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2625 RSV 325-1150 A8B 674 DL
Komb.-Nr. 0 400 876 305

supersedes 9.83
company. KHD
engine B F 6 L 913 B
Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 X =	0,3-1,0 3,0	-	-	-	ca. 15	325	6,8	1150 500 1000	11,4+0,1 12,1+0,1 11,8+0,2
							325 585-645	7,2-7,4 = 2,0		
ca. 50 (5)	10,4 4,0 1325	1190-1200 1265-1295 0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 80,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800 LDA 500	0,7 bar 83,0-86,0 (80,5-88,5) 0 bar 56,5 - 59,5 (54,5 - 61,5)	100	116,5-126,5 (113,5-129,5) = 15,9 - 16,4 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

D. Adjustment Test for Manifold Pressure Compensator

KHD 1 o

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2625 with ..A8B 674 DL	0,7	0	12,2 - 12,3
			11,1 - 11,2
		0,36	11,9 - 12,0
		0,2	11,1 - 11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A) WPP 001/4 KHD 1 g 3
7. Edition
En

PES 4 A 85 D 410/3 RS 2638 RSV 325-1150 A 0 B 2168 L
A 0 C 2168 L

supersedes 11.83
company KHD
engine BF 4 L 913
66 kW (90 PS)
/ 2300 min^{-1}
tractor DX 92 (1)
60 kW (82 PS)
/ 2300 min^{-1}
tractor DX 86 (2)
BF 4 L 913 T

Symbol S 29 =

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC) Symbol S 28 =

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1150	11,8+0,1	8,2 - 8,3	0,3(0,45)	10,6+0,1	7,5-7,6	
325	7,7-7,9	0,9 - 1,5	0,2(0,4)	7,7-7,9	1,0-1,6	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.29	325	7,3	1150	11,8+0,1
	X =	4,0					100	min.19,5	500	12,3+0,1
ca.53	10,8	1190-1200					325	7,7-7,9	965	12,0+0,2
(2a)	4,0	1325-1355					700-760	= 2,0		
	1495	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
(1) 1150	80,5-81,5 (78,5-83,5)	1190-1200*	800	79,0-82,0 (76,5-84,5)	100	108,5-118,5 = RW 16,9 - 17,4	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.84

H10

B. Governor Settings

(1) Degree of deflection of control lever 1	Upper rated speed rev/min: Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.26	325	7,0	1150	10,5+0,1
	x =	4,0					100	min.19,0	500	11,2+0,1
ca.56	9,6	1220-1230					325	7,4-7,6	900	10,9+0,3
	4,0	1325-1355					720-780	= 2,0		
(2a)	1475	0,3-1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(2) 1150	74,5-75,5 (72,5-77,5)	1220-1230*	800	65,5-68,5 (63,5-70,5)	100	108,5-118,5	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

(1) Degree of deflection of control lever 1	Upper rated speed rev/min: Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

En

H11

H44

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 g 1
3. Edition
En

PES3A85D410/3 RS 2642 RSV325-1150A8B2102-1L
Komb.-Nr. 0 400 863 007
1 - 3 - 2 je 120° ±0,5° (± 0,75°)

supersedes 9.82
company: KHD
engine F3L 913
42 kW (57 PS)$_1$
2300 min^{-1}
Schlepper D 6007-S23

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,5+0,1	7,1-7,3	0,3 (0,45)			
325	8,9-9,1	1,7-2,3	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca.20	325	8,5	1150	11,5+0,1
	X=						100	min.19,0	700	11,8+0,1
**							325	8,9-0,1	1075	11,6+0,3
(5) ca.54	10,2	1190-1200					485-545=2,0			
	4,0	1265-1295								
	1350	0,3 -1,7								

** Set speed regulation before torque control

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	70,5-73,5 (68,5-75,5)	1190-1200 *	700	66,0-67,0 (64,0-69,0)	100	133,5-143,5	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.84

BOSCH
Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

H12

H12

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RAB 10,8 a
3. Edition
En

Testoil-ISO 4113

PES 6 A 100 D 410 RS 3039 RSV 475-950 A 1 B 2121 L
A 1 C 2121 L
Komb.-Nr. 0 401 276 051

supersedes 8.82
company RABA
engine 184 kW (250 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,6 -1,7 (1,55-1,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	13,6+0,1	15,2-15,4	0,3 (0,6)			
475	5,9-6,1	1,2-1,6	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	475	5,5	950	13,6+0,1
	x = 3,75						100	min.19,5	500	15,3+0,2
							475	5,9-6,1	840	14,4+0,2
(5) 8. 49	12,6	990-1000					570-630	= 2,0		
	4,0	1030-1060					675	max. 1,0		
	1195	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 950	0,7 bar 152,0-154,0 (150,0-156,0)	990-1000*	LDA 750	0,7 bar 180,0-184,0 (178,0-186,0)	-	-	-	-
			LDA 500	0 bar max. 149,0 (max. 151,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D. Adjustment Test for Manifold Pressure Compensator

RAB 10,8 a

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution / difference mm (1)
PES 6A..RS 3039 with..A 1 B 2121L	0,7		15,3 - 15,4
		0	13,7 - 13,8
		0,55	15,0 - 15,1
		0,42	14,1 - 14,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1) VPP 001/4 VOB 7,0 a

1. Edition

En

PE 6 P 100 A 320 RS 256 RQV 250-1200 PA 212/2 R

supersedes

company Volvo-BM

engine D 70 B

Sleeve position 36,0 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,3-13,1	0,5			
600	9	5,2-6,2				
	12	11,1-12,4				
	15	16,6-18,2				
200	9	3,2-4,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1290	15,0-18,3	-	-	-	ca. 23	120	8,3-10,0	1290	8,2
	1560	0					250	6,2-8,2		
ca. 66	1200	15,1-18,2					350	3,3-5,4		
	1300	8,0-13,1					500	0 - 2,5		
	1400	0 - 7,3					570	0		
	1520	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	73,0-75,0	1230-1240*	-	-	100	230,0-270,0	-	-
					225	10,0-16,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.74

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

H15

②

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/ 4 DAF 11,6 o5

1. Edition

En

PE6P 110 A 320 RS 372 RQ 250/1100 PA 428/2R
Komb.-Nr. 0 401 846 405

supersedes:
company: DAF
engine DKTL 1160

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 -2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3+0,1	14,0-14,2	0,4(0,8)			
250	6,7-6,9	0,7- 0,9	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation: Setting point		Test specifications ④		Idle speed regulation: Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	11,3 4,0 1400	1145-1160 1220-1250 0-1,0	250	6,8	100 250 320-380	min. 8,3 6,7- 6,9 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min.⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/~1000 strokes 2	rev/min 3	rev/min 4	cm³/~1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 850	0,5 bar 140,5-142,5 (137,5-145,5)	-	LDA 600	0 bar 136,5-139,5 (133,5-142,5)	100	240,0-280,0 =20,0-21,0 mmRW

Checking values in brackets

3.84

H16

H16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..RS 372 +RQ..PA 428/2R	0,70	0 0,30	12,3-12,4 12,0-12,1 12,1-12,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

En

WPP 001/4 HIP 11,9a1
1. Edition

PE6P 110 A 720 RS 380
Komb.-Nr. 0 401 846 501

RQV 250-1000 PA 434-2

supersedes
company Hispavinsa
engine BSR 36 C

Testöl ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 -2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	15,5+0,1	18,8 - 19,0	0,4(0,75)			
250	8,5-8,7	2,4 - 3,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	rev/min 10	mm 11
max.	100	15,2-17,8	-	-	-	ca. 15 (3a)	100 250 310-370	min. 10,0 8,5- 8,7 = 2,0	250 370 430 1045	,1-1,2 2,5-3,5 3,8-4,0 7,9
ca. 46	4,5 4,0 300	1040-1050 1170-1200 0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 188,0-190,0 (185,0-193,0)	1040-1050*	LDA 500	0 bar 141,0-144,0 (138,5-146,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

H18

H18

D. Adjustment Test for Manifold Pressure Compensator

HIP 11,9a1

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE6P..RS 380 +RQV..PA 434-2	0,70		15,5-15,6
		0	13,2-13,3
		0,45	15,0-15,1
		0,31	13,7-13,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 v
1. Edition

En

PE6P110 A 320 RS 407-1 RSV 275-1000 P5/458-3

Komb.-Nr. 0 401 876 275

supersedes
company DAF
engine DKCL 1160

Tastoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75- 2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,3+0,1	13,8-14,1	0,4 (0,75)			
275	7,0-7,2	1,0- 1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,5	-	-	-	ca.23	275	6,6	600	12,5-12,6
							275	7,0-7,2	1000	11,1-11,3
ca.48	10,1	1040-1050					675-735 = 2,0		750	12,1-12,3
(2a)	4,0	1160-1190							850	11,4-11,7
	1325	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ! rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	LDA	0,7 bar	100	245,0-265,0	275	7,1
600	137,5-140,5 (135,0-143,0)		1000	114,5-119,5 (111,5-122,5)		(241,0-269,0)		
			LDA	0 bar				
			600	135,5-138,5 (132,5-141,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

H20

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE6P..RS 407-1	0,70		12,3-12,4
+RSV..P5/458-3		0	12,1-12,2
		0,28	12,2-12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 7,0 i
1. Edition
En

PE 6 P 110 A 320 RS 465 RSV 650-750 P4/421

Komb.-Nr. 0 401 876 267

supersedes
company Volvo-Penta
engine TD 70 G
120 KW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 -3,1 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5±0,1	13,1-13,3	0,4(0,75)			2,5± 0,1
650	4,9-5,1	1,6- 2,0	0,3(0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x= 3,25	-	-	-	ca. 33	650	6,1	-	-
							650	6,0-6,2		
ca. 37 (2a)	11,5	750-755					660-700	=2,0		
	4,0	775-785								
	925	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	131,0-133,0 (128,0-136,0)	750-755*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

H22

H22

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 9,6 f
3. Edition

En

PE 6 P 100 A 320 LS 805 RQ 900 PA 310 R
Komb.-Nr. 0 401 846 393

1- 6- 3- 5- 2- 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

supersedes 9.78
company Daimler-Benz
engine OM 401
110 kW (150 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,7+0,1	9,8-10,0	0,3(0,6)			
350	7,8-8,0	2,3- 2,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	9,7 4,2 1050	915-920 940-950 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 915-920 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	98,0 - 100,0 (96,0 - 102,0)	-	-	-	100 945	110,0-130,0 4,1- 4,3 mmRW max.Streuung 4 (6)

Checking values in brackets

3.84

H23

H23

PE 6 P 190 A 320 LS 805 RQ 750 PA 374 R
Komb.-Nr. 0 401 846 383

1- 6- 3- 5- 2- 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

supersedes
company Daimler-Benz
engine OM 401
139 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 -3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,2+0,1	9,9-10,1	0,3(0,6)			
350	7,8-8,0	2,4- 2,9	0,3(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,2 4,8 850	750-755 780-790 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	99,0-101,0 (97,0-103,0)	-	-	-	100	110,0-130,0 (106,0-134,0)

Checking values in brackets

3.84

H24

PE 6 P 100 A 320 LS 805 RQ 1150 PA 407
Komb.-Nr. 0 401 846 394

1- 6- 3 - 5- 2- 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

supersedes
company Daimler-Benz
engine OM 401
132 kW (179 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 -3,5 (3,35-3,55) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	10,8-11,0	0,3(0,6)			
350	7,8-8,0	2,3- 2,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,2 4,1 1300	1155-1160 1195-1205 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1155-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	108,0 - 110,0 (106,0 - 112,0)	-	-	-	100	110,0-130,0
					1200	4,0- 4,2 mmRW Streuung max. 4 (6)

Checking values in brackets

3.84

J1

Test Specifications Fuel Injection Pumps and Governors

② WPP 001/4 MB 12,8b2
4. Edition
En

PE 8 P 100 A 320 LS 810 RQ 300/1250 PA 187 R
Komb.-Nr. 0 401 848 038
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

superseded 8.83
company Daimler-Benz
engine OM 402
188 kW (256 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 -3,5 (3,35-3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,6+0,1	10,2-10,4	0,3(0,6)			
300	7,4-7,6	1,3- 1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	9,6	1295-1310	300	7,5	100	min.9,0	1250	10,6-10,7
				4,0	1345-1375			300	7,4-7,6	600	10,6-10,8
				1500	0-1,0			405-445	= 2,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1250	102,0 - 104,0 (100,0 - 106,0)	600	600	77,0 - 82,0 (74,5 - 84,5)	100	110,0 - 130,0 (106,0-134,0)

Checking values in brackets

3.84

J2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 12,8 c
3. Edition

En

PE 8 P 100 A 320 LS 819 RSV 350-1100 PO/809 DR
Komb.-Nr. 0 401 878 082
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ± 0,5° (± 0,75°)

supersedes 10.74
company Daimler-Benz
engine OM 402 220 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 -3,5 (3,35-3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	9,3-9,4	8,2-8,4	0,35 (0,6)			
350	7,5-7,7	2,0-2,5	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.34	350	7,6	1080	9,3-9,4
	x =	4,75						**	900	9,3-9,4
ca. 56 (2a)	8,3	1120-1130							600	9,8-10,0
	4,0	1180-1210								
	1300	0,3-1,7								

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1080	82,0-84,0 (80,0-86,0)	1120-1130*	600	76,0-80,0 (73,5-82,5)	100	110,0-130,0 (106,0-134,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

J3

J3

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MB 12,8 c 1
1. Edition

En

PE 8 P 100 A 320 LS 819 RSV 350-1250 PO/810
Komb.-Nr. 0 401 878 085

supersedes
company Daimler-Benz
engine OM 402
256 PS

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testnr. 1130 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 -3,5 (3,35 -3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,2+0,1	10,0-10,2	0,3(0,6)			
350	7,4-7,6	1,5- 2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x =	0,3-1,0 5,0	-	-	-	ca.38	350	7,5 **	-	-
ca.66 (2a)	9,2 5,0 1440	1260-1270 1330-1350 0,3 - 1,7					500-560	=2,0		

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2 mm control-rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle-: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230	100,0-102,0 (98,0-104,0)	1260-1270*	-	-	100	110,0-130,0 (106,0-134,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

J4

J4

Test Specifications Fuel Injection Pumps and Governors

KPP 001/4 SCA 11,0 r
6. Edition
En

PE 6 P 110 A 720 RS 3040, I...Z RQV 250-1100 PA 379 R

Komb.-Nr. 0 401 846 710

supersedes 83
compact Scania
engine DS 1101

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	15,5-15,7	0,6(0,8)			3,3 ± 0,1 (3,0-3,5)
225	4,4-4,6	1,7-2,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 10 (3a)	100 225 310-370	min.5,9 4,4-4,6 = 2,0	200 500 800 1100	1,0-1,2 3,8-4,0 5,4-5,6 8,5
ca. 64	12,0 4,0 1400	1140-1150 1250-1280 0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,9 bar 155,0-157,0 (153,0-159,0)	1140-1150 *	LDA 600	0,9 bar 160,5-163,5 (158,0-166,0)	100	240,0-290,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 128,0-132,0 (126,0-134,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

J5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3040 + RQV ... PA 379R	0,90	0 0,37 0,25	13,0 - 13,1 11,7 - 11,8 12,7 - 12,8 11,8 - 12,0

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Increased or reduced outputs of the types listed on page 1

Testoil-ISO 4113

Output variation	Output %	Fuel delivery in cm^3/1000 strokes at pump speed (min^{-1}) 1)				Adjustment of control-rod position from 100% setting (mm)
		1100	900	750	600	
P	120	205	208	212	214	+ 2,6
U	115	191	196	198	200	+ 1,9
R	113	186	191	192	195	+ 1,7
W	110	180	185	185	188	+ 1,3
V	108	175	179	179	183	+ 1,0
Y	105	170	173	172	177	+ 0,7
T	103	166	167	166	171	+ 0,4
S	98	154	156	156	158	- 0,2
X	95	146	149	149	150	- 0,5
Q	93	141	145	145	146	- 0,8
Z	90	134	138	139	140	- 1,1
O	88	131	134	136	137	- 1,3
N	85	124	126	130	131	- 1,6
M	80	114	115	119	121	- 2,1
L	75	105	106	108	111	- 2,6
K	70	98	98	98	99	- 3,0
J	65	89	90	90	90	- 3,4
I	60	86	84	83	80	- 3,8

1) Tolerances with fuel quantity are ± 1 cm^3 at setting speed.

With subsequent orders from KH/ALP only the standard setting according to page 1 will be delivered. If required, the above mentioned variations are to be carried out through your local BOSCH Service Station.

The delivery amounts given in the table have been compiled from Saab-Scania documentation upon their request.

PE 6 P 110 A 720 RS 3040 RQ 250/1100 PA 411 R
Komb.-Nr. 0 401 846 717

supersedes 6.83
company Scania
engine DS 11 01

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 -3,4 (3,25-3,45) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	15,5-15,7	0,6(0,8)			3,3± 0,1
225	4,4-4,6	1,7- 2,1	0,2(0,4)			(3,0- 3,5)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	12,0 4,0 1350	1145-1160 1230-1260 0-1,0	225	4,5	100 225 300-360	min. 5,9 4,4-4,6 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1145-1160min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 1100	0,9 bar 155,0-157,0 (153,0-159,0)		LDA 600 LDA 500	0,9 bar 160,5-163,5 (158,0-166,0) 0 bar 128,0-132,0 (126,0-134,0)	100	240,0-290,0 =20,0- 21,0 mm RW

Checking values in brackets

3.84

J8

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P .. RS 3040 +RQ.. PA 411 R	0,90		13,0-13,1
		0	11,7-11,8
		0,37	12,7-12,8
		0,25	11,8-12,0

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

En

WPP 001/4 ROL 12,2 b
1. Edition

PE 6 P 120 A 320 RS 3042 RQV 350/650-750 PA 386 R

supersedes
company Rolls Royce
engine C 6 TCA

1 - 4 - 2 - 6 - 3 - 5 je 60° ± 0,5° (± 0,75°)

Test[illegible] ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 -3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
720	14,8+0,1	31,9-32,3	0,5(0,8)			
350	4,3-4,5	1,4- 1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ______.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	rev/min 10	mm 11
max.	730	15,2-17,8	ca.38	13,8	675-685	ca.12	100		325	0,5-1,6
ca. 65	13,8 4,0 900	750 - 755 775 - 785 0 - 1,0		4,0	715-745	(3a)	350 645-705	4,3-4,5 =2,0	350 - 600 650 750	1,9-2,1 2,2-3,5 7,4

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
720	319,0-323,0 (316,0-326,0)	750 - 755*	-	-	100	17-18 mm RW	-	-
					350	14,0-18,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.84

J10

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

J10

PE 8 P 120 A 920/4 RS 3047 RQ 750 PA 416 R

Komb.-Nr. 0 401 848 707

1 - 6 - 2 - 5 - 8 - 3 - 7 - 4 je 45° ± 0,5° (± 0,75°)

supersedes
company Rolls Royce
engine C 8 TCA
250 kW (340 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 -3,6 (3,45-3,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,4+0,1	24,7-25,1	0,5 (0,9)			
300	6,1-6,3	3,8- 4,4	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
-	-	-	-	13,4 4,0 900	750-755 775-785 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	247,0-251,0 (244,0-254,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

3.84

PE 8 P 120 A 920/4 RS 3047 RQ 900 PA 491
Komb.-Nr. 0 401 848 716

1- 6 - 2 - 5 - 8 - 3 - 7 - 4 je 45° ± 0,5°(± 0,75°)

supersedes
company: Rolls Royce
engine: C 8 TCA
250 kW (340 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 -3,6 (3,45-3,65) mm (from BDC) RW= 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	14,4+0,1	24,7-25,1	0,5 (0,9)			
300	6,1-6,3	3,8- 4,4	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	13,4 4,0 1050	900-905 932-941 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900-905 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	247,0-251,0 (244,0-254,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

3.84

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 SAU 12,0 d 1
1. Edition
En

PES 6 P 120 A 420 RS 3049-1 RQ 300/1100 PA 687
1 - 4 - 2 - 6 - 3 - 5 je 60° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: Saurer
engine: D4KTM
235 kW
Komb.-Nr.0 402 046 744

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 -2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	19,9-20,1	0,5(0,9			
300	3,9-4,1	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
750	13,1-13,9	750	13,5	10,7	1145-1160	300	4,0	100	min. 5,4	1100	11,7-11,8
				4,0	1200-1230			300	3,9-4,1	920	12,0-12,3
				1350	0-1,0			385-425	=2,0	825	12,5-12,7
										700	12,7-12,8

Torque-control travel on flyweight assembly dimension a = 0,45 mm
Speed regulation: At 1145-1160 min^{-1}
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1100	0,7 bar 199,0-201,0 (196,0-204,0)	-	LDA 700	0,7 bar 211,0-217,0 (208,0-220,0)	100	200,0-230,0
			LDA 400	0 bar 123,0-127,0 (120,0-130,0)		

Checking values in brackets

3.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
PES 6 P..RS 3049-1 +RQ .. PA 687	0,70	0	12,7-12,8
		0,40	10,1-10,2
		0,20	12,3-12,4
			10,4-10,6

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J14

En J14

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 e
3. Edition
En

PE 10 P 110 A 920/5 LS 3073 RQV 300-1250 PA 549-1
Komb.-Nr. 0 401 849 704
1-10- 9- 4- 3- 6- 5- 8- 7- 2
0-72-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 83
company KHD
engine: BF 10 L 413 F
294 KW (400 PS) (1)
265 KW (360 PS) (2)
bei 2500 min⁻¹

Testöl ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,1+0,1	14,9-15,1	0,4 (0,8)			
300	6,3-6,5	1,1-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca.22	100	min.8,2	250	0,5-0,8
							300	6,7-6,9	580	2,9-3,1
ca.66	11,1	1290-1300							920	4,8-5,0
	4,0	1370-1400							1250	8,0
	1500	0-1,0				320-500 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
(1)		1290-1300*	LDA	0,7 bar	100	130,0-150,0	-	-
LDA	0,7 bar		900	144,0-146,0		(126,0-154,0)		
1250	149,0-151,0			(142,0-148,0)		=13,0- 13,2		
	(147,0-153,0)		LDA	0 bar		mm RW		
			500	94,0- 96,0				
				(92,0- 98,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.84

J15

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

JAS

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (3a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) LDA 1250	0,7 bar 135,0-137,0 (133,0-139,0)	1290-1300*	LDA 900 LDA 500	0,7 bar 128,0-131,0 (126,0-133,0) 0 bar 94,0- 96,0 (92,0- 98,0)	100	130,0-150,0 (126,0-154,0) =13,0- 13,2 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil:ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm
PE10P..LS 3073 +RQV ..PA 549-1	0,90	0 0,59 0,51	12,1-12,2 10,1-10,2 11,5-11,6 10,7-10,9

En

J16

JAG

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 q

1. Edition

En

PE 6 P 120 A 720 RS 3123 RQV 300-900 PA 501-1
Komb.-Nr. 0 401 846 787

supersedes –
company Fiat
engine 8210.22.105
243 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDG) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	13,2+0,1	21,6-21,8	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm **
max.	995	15,2-17,8	-	-	-	ca. 10	100	min.7,6	325	1,2-1,4
							300	6,0-6,2	550	3,8-4,5
ca.65	12,2	940-950							800	6,6-7,0
	4,0	1035-1065							900	7,8
	1200	0-1,0				375-490 3a				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b 4a: rev/min 3	Fuel delivery characteristics 5a high idle speed 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery 6 idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 216,0-218,0 (213,0-221,0)	940-950*	LDA 500	0,9 bar 235,0-241,0 (232,0-244,0	100	240,0-260,0 (236,0-264,0		-
			LDA 500	0 bar 143,0-145,0 (140,0-148,0				

Checking values in brackets

* 1 mm less control ... travel than col 2

J17

3.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
© by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

JA7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
PE 6 P.. RS 3123 +RQV.. PA 501-1	0,90	0 0,46 0,32	13,2-13,3 10,0-10,1 12,4-12,5 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J18

En J18

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 11,0 e 1
1. Edition

PE 6 P 120 A 320 LS 3810 RSV 350 - 1150 PO/810 En
1- 6- 3- 5- 2- 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

supersedes
company Daimler-Benz
engine OM 421 A
184 KW

Komb.-Nr. 0 401 876 733

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,3+0,1	15,5-15,7	0,5 (0,9)			
350	4,7-4,9	1,6- 2,2	0,8 (1,2)			

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 36	350	4,8	-	-
	x	= 4,75					100	min. 19,5		
ca. 56	9,3	1175-1185					350	4,7 - 4,9		
(2a)	4,0	1250-1270					380-440	= 2,0 **		

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2 mm control-rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	155,0 - 157,0 (152,0 - 160,0)	1175-1185*	-	-	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.84

Jay

Test specifications Fuel injection pumps and governors

PE 6 ZW 150/120 RS 70/11 RQU 250-350/1100 ZWA 46 DR

Komb.-Nr. 0 402 436 033

1- 2- 3 - 4 - 5 - 6

0-45-120-165-240-285° ± 0,5° (± 0,75°)

Replaces 11.83

Firm: MTU

Engine: MB 6 V 331

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	
600	9,0	125,0-145,0	16,0 (24,0)	120,0-150,0	-
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
1100		C Sp. 2			
350		C Sp. 5	12,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.58	650	18,0	ca.27	150	14,1-16,4	ca.21	150	11,1-13,2	-	-
	1100	17,5-18,0		220	10,2-11,8		220	8,0-8,7		
	1150	11,7-16,0		350	7,4-7,6		250	7,6-7,8		
	1200	3,0-10,0		500	2,0-2,7		400	2,7-4,5		
	1280	0-1,0		650	2,0		520	0		
				1000	1,8-2,0					
				1160	0					

Torque control travel a = - mm Speed regulation: At 1130-1140 min⁻¹ 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min 4	cm³/1000 strokes 5	Starting fuel delivery: min 6	cm³/1000 strokes 7
1100	279,0-285,0 (276,0-288,0)	-	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D 7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 g
2. Edition
En.

PE 8 ZW 150/120 RS 74/11 RQU 250-350/1100 ZWA 46 DR
Komb. Nr. 0 402 438 011

Replaces 11.83
Firm: MTU
Engine MB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ±0,5° (±0,75°)

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60(2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	
600	9,0	125,0-145,0	16,0(24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0(15,0)	33,0-61,0	
1100		C Sp 2			
350		C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min 8	Control-rod travel mm 9	Torque control: min 10	Control-rod travel mm 11
ca.58	650	18,0	ca.27	150	14,1-16,4	ca.2	150	11,1-13,2	-	-
	1100	17,5-18,0		220	10,2-11,8		220	8,0-8,7		
	1150	11,7-16,0		350	7,4-7,6		250	7,6-7,8		
	1200	3,0-10,0		500	2,0-2,7		400	2,7-4,5		
	1280	0 - 1,0		650	2,0		520	0		
				1000	1,8-2,0					
				1160	0					

Torque control travel a = - mm Speed regulation: At 1130-1140 min⁻¹ - mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1100	279,0-285,0 (276,0-288,0)	-	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH, Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany
imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

J21

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 b
6. Edition
En.

PE 6 ZW 150/120 RS 1001/11 RQUV 300-1200 ZWA 48 R
Komb.-Nr. 0 402 436 038
1 - 2 - 3 - 4 - 5 - 6
0 - 45-120-165-240-285° ± 0,5° (±0,75°)

Replaces 11.83
Firm. MTU
Engine: MB 6 V 331

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 85	1200	8,0-21,0	ca. 30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0 -2,0		730	0					

Torque control travel a = - mm Speed regulation: At 1230-1240 min⁻¹ 1mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
1200	18 mm RW	300 Idle = 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

J22

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 c
2. Edition
En.

PE 8 ZW150/120 RS 1002/11 RQUV 300-1200 ZWA 48 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm MTU
Engine MB 8 V 331

Komb.-Nr.
0 402 438 012

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.85	1200	8,0-21,0	ca. 30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0 -2,0		730	0					

Torque control travel a = - mm Speed regulation At 1230-1240 min⁻¹ 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min 1	cm³/1000 strokes 2	Control rod stop at speed: min 3	Fuel-delivery characteristics: min 4	cm³/1000 strokes 5	Starting fuel delivery: min 6	cm³/1000 strokes 7
1200	18 mm RW	300 = 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

05.84

BOSCH Geschäftsbereich AM Kundendienst Kfz Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

J23

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 c1
2. Edition
En.

PE 6 ZW 150/120 RS 1007/11 RQU 250-400/1100 ZWA 49 R
Komb.-Nr. 0 402 436 043
1 - 2 - 3 - 4 - 5 - 6
0 - 45-120-165-240-285° ± 0,5° (±0,75°)

Replaces 11.83
Firm: MTU
Engine: MB 6 V 331

Note VDT-W-Gen./7 Governor adjustement according to VDT-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min 10	Control-rod travel mm 11
ca. 58	700	18,0-18,5	ca. 22	150	15,0-18,0	ca.13	150	9,8-11,9	-	-
	1125	17,6-18,0		400	7,8-8,8		250	7,8-8,2		
	1150	12,0-17,0		700	1,8-2,4		400	2,3-4,5		
	1200	0 - 7,5		1100	1,8-2,4		530	0		
	1300	0 - 1,0		1160	0					

Torque control travel a = - mm Speed regulation At 1130-1140 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1100	18 mm RW	Idle 300 = 8,0 mm RW	-	-	100	18,0-18,2 mm RW
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

J24

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 e
2. Edition
En.

PE 12 ZW 150/120 RS 1008/11 RQUV 300-1200 ZWA 50 R

Replaces 11.83
Firm: MTU
Engine: MB 12 V 331

Komb.- Nr. 0 402 430 003
1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345° ± 0,5° (±0,75°)

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery – Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.85	1200	18,0-21,0	ca.30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a = - mm Speed regulation: At 1230-1240 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1200	18 mm RW	300 Idle = 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
imprimé en Repub. fédérale d'Allemagne par Robert Bosch GmbH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 e 1

En. 2. Edition

PE 12 ZW 150/120 RS 1008/11 RQUV 300-1200 ZWA 55 R

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

0-45-60-105-120-165-180-225-240-285-300-345° ±0,5° (±0,75°)

Note VDT-W-Gen./7

Replaces
Firm: 11.83
Engine: MTU MB 12 V 331
Komb.-Nr.
0 402 430 002

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.85	1200	18,0-21,0	ca.30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a = - mm Speed regulation: At 1230-1240 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
1200	18 mm RW	300 Leerlauf = 8,0 mm RW	-		-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K2

K2

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 e 1

2. Edition

En.

PE 8 ZW 150/120 RS 1009/11 RQU 250-400/1100 ZWA 49 R

Komb.-Nr. 0 402 438 015

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7 Governor adjustement according to VDT-I-420/112

Replaces 11.83

Firm. MTU

Engine MB 8 V 331

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.58	700	18,0-18,5	ca.22	150	15,0-18,0	ca.13	150	9,8-11,9	-	-
	1125	17,6-18,0		400	7,8-8,8		250	7,8-8,2		
	1150	12,0-17,0		700	1,8-2,4		400	2,3-4,5		
	1200	0-7,5		1100	1,8-2,4		530	0		
	1300	0-1,0		1160	0					

Torque control travel a = - mm Speed regulation: At 1130-1140 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1100	18 mm RW	300 = 8,0 mm RW Leerlauf	-	-	100	18,0-18,2 mm RW
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

K3

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 e
2. Edition
En.

PE 8 ZW 150/120 RS 1009/11 RQUV 300-1200 ZWA 50 R
Komb.-Nr. 0 402 438 014
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm MTU
Engine MB 8 V 331

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.85	1200	18,0-21,0	ca.30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a = - mm Speed regulation: At 1130-1140 min⁻¹ 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1200	18 mm RW	300 Idle = 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
By Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 a

6. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQUV 300-900 ZWA 51 R

1 - 2 - 3 - 4 - 5 - 6
0 -45 -120-165-240-285° ± 0,5° (±0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm: MTU
Engine MT 6 V 396
Komb.-Nr.
0 402 436 053

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-26,0 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 85	920 950 1020 1090	18,0-21,5 14,4-18,6 4,0-10,2 0-2,0	ca. 30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0	ca.23	100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	-	-

Torque control travel a - mm Speed regulation: At 910-915 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
900	18 mm RW	300 Idle = 8 mm Rw	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en Repub. Fédérale d'Allemagne par Robert Bosch GmbH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 b

2. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQUV 750 ZWA 53 R

1 - 2 - 3 - 4 - 5 - 6
0 -45 -120-165-240-285° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm:
Engine MTU MT 6 V 396

Komb.-Nr.
0 402 436 054

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: mm min⁻¹ 10	Control-rod travel mm 11
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770	9,6-11,8								
	790	1,4-5,2								
	810	0								

Torque control travel a - - mm Speed regulation: At 760-765 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	12 mm RW Leerlaufanschl.	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K6

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 c
2. Edition
En.

PE 6 ZW 160/120 RS 1012/11 RQUV 900 ZWA 53 R

1 - 2 - 3 - 4 - 5 - 6
0 -45 -120-165-240-285° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm: MTU
Engine: MT 6 V 396
Komb.-Nr.
0 402 436 048

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 70	900	18,0	-	-	-	-	-	-	-	-
	920	11,1-12,0								
	940	1,4-5,6								
	965	0								

Torque control travel a = mm Speed regulation: At 910-915 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
900	18 mm RW	12 mm RW idle stop	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K7

K7

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 f

2. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQU 750 ZWA 56 R

1 -2- 3- 4- 5- 6
0-45-120-165-240-285° -+ 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm: MTU
Engine MT 6 V 396

Komb.-Nr.
0 402 436 045

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: mm min⁻¹ 10	Control-rod travel mm 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a - - mm Speed regulation: At 760-765 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	12 mm RW idle stop	-	-	100	ca. 20 mm RW with starting magnet

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K8

K1

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 d
2. Edition
En.

PE 6 ZW 160/120 RS 1012/11 RQU 900 ZWA 56 R

1 - 2 - 3 - 4 - 5 - 6
0 -45 -120-165-240-285° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm: MTU
Engine: MT 6 V 396

Komb.-Nr.
0 402 436 046

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Testoil-ISO 4113

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,0 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque-control: min⁻¹ 10	Control-rod travel mm 11
ca. 52	900	18,0	-	-	-	-	-	-	-	-
	860	26,8-32,4								
	880	22,3-26,3								
	900	17,0-19,0								
	930	3,7-10,0								
	960	0								

Torque control travel a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
900	18 mm RW	12 mm RW idle stop	-	-	100	ca. 20 mm RW with starting magnet

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K9

ks

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 e

2. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQU 750 ZWA 57 R

Komb.-Nr. 0 402 436 047

1- 2- 3- 4- 5- 6

0-45-120-165-240-285° ± 0,5° (± 0,75°)

Replaces

Firm: 11.83

Engine: MTU MT 6 V 396

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Sleeve position 49,0 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a = - mm Speed regulation: At 760-765 min⁻¹ 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	12 mm RW idle stop	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

KAO

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 a
2. Edition
En.

PE 8 ZW 160/ 120 RS 1013/11 RQUV 300-900 ZWA 51 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm: MTU
Engine: MT 8 V 396

Komb.-Nr.
0 402 438 021

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Cyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 85	920 950 1020 1090	18,0-21,5 14,4-18,6 4,0-10,2 0 - 2,0	ca. 30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0	ca.23	100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	-	-

Torque control travel a = - mm Speed regulation: At 910-915 min⁻¹ 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
900	18 mm RW	300 Idle = 8 mm RW	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
By Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 b
2. Edition
En.

PE 8 ZW 160/ 120 RS 1013/11 RQUV 750 ZWA 53 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm: MTU
Engine: MT 8 V 396

Komb.-Nr.
0 402 438 022

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testöl-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Cyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770	9,6-11,8								
	790	1,4-5,2								
	810	0								

Torque control travel a - mm Speed regulation: At 760-765 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	12 mm RW idle stop	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

2s

Test specifications Fuel injection pumps and governors

40

WPP 001/4 MTU 31,7 c
2. Edition

En.

PE 8 ZW 160/120 RS 1013/11 RQUV 900 ZWA 53 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm: MTU
Engine: MT 8 V 396

Komb.-Nr.
0 402 438 019

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Cyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 70	900	18,0	-	-	-	-	-	-	-	-
	920	11,1-12,0								
	940	1,4-5,6								
	965	0								

Torque control travel a - mm Speed regulation: At 910-915 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
900	18 mm RW	12 mm RW idle stop	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K13

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 f
2. Edition
En.

PE 8 ZW 160/120 RS 1013/11 RQU 750 ZWA 56 R
Komb.-Nr. 0 402 438 016
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Replaces 11.83
Firm: MTU
Engine: MT 8 V 396

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a - - mm Speed regulation: At 760-765 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	12 mm RW idle stop	-	-	100	ca. 20 mm RW with starting magnet

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

KAY

2s

Test specifications Fuel injection pumps and governors

40

WPP 001/4 MTU 31,7 d
2. Edition

En.

PE 8 ZW 160/120 RS 1013/11 RQU 900 ZWA 56 R
Komb.-Nr.0 402 438 017
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Replaces 11.83
Firm: MTU
Engine: MT 8 V 396

Note VDT-W-Gen./7

Testoil ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDZyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Sleeve position 49,0 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 52	900	18,0	-	-	-	-	-	-	-	-
	860	26,8-32,4								
	880	22,3-26,3								
	900	17,0-19,0								
	930	3,7-10,0								
	960	0								

Torque control travel a = - mm Speed regulation: At 910-915 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min 3	Fuel-delivery characteristics: min 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
900	18 mm RW	12 mm RW idle stop	-	-	100	ca. 20 mm RW with starting magnet

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K15

KAS

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 e
2. Edition
En.

PE 8 ZW 160/120 RS 1013/11 RQU 750 ZWA 57 R

Replaces 11.83
Firm: MTU
Engine MT 8 V 396

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Komb.-Nr. 0 402 438 018

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,0 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: mm min⁻¹ 10	Control-rod travel mm 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a - mm Speed regulation: At 760-765 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	idle stop 12 mm RW	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République fédérale d'Allemagne par Robert Bosch GmbH

KAG

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,5 d

En. 2. Edition

PE 12 ZW 160/120 RS 1015/11 RQUV 300-900 ZWA 51 R

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345° ±0,5° (±0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm MTU
Engine MT 12 V 396
Komb.-Nr.
0 402 430 006

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Cyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 85	920	18,0-21,5	ca.30	200	13,0-15,0	ca.23	100	14,2-16,0	-	-
	950	14,4-18,6		300	10,0-11,5		300	8,0		
	1020	4,0-10,2		375	8,0		450	1,6-3,7		
	1090	0-2,0		500	2,5-4,2		570	0		
				630	0					

Torque control travel a = - - mm Speed regulation: At 910-915 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min⁻¹ 1	cm³/1000 strokes 2	min⁻¹ Idle 3	min⁻¹ 4	cm³/1000 strokes 5	min⁻¹ 6	cm³/1000 strokes 7
900	18 mm RW	300 = 8 mm RW	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,5 e

2. Edition

En.

PE 12 ZW 160/120 RS 1015/11 RQUV 750 ZWA 53 R

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345° ±0,5° (±0,75°)

Note VDT-W-Gen./7

Replaces
Firm: 11.83 MTU
Engine: MT 12 V 396

Komb.-Nr.
0 402 430 007

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 12

Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770 790 810	9,6-11,8 1,4- 5,2 0								

Torque control travel a - - mm Speed regulation: At 760-765 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	12 mm RW idle stop	-	-	-	-

Checking values in brackets

03.84

K18

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,5 c

3. Edition

En.

PE 12 ZW 160/120 RS 1015/11 RQU 750 ZWA 57 R

Replaces 11.83

Firm: MTU

Engine: MT 12 V 396

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

0-45-60-105-120-165-180-225-240-285-300-345° ±0,5° (±0,75°)

Komb.-Nr.
0 402 430 005

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,0 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a = - mm Speed regulation: At 760-765 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	idle stop 12 mm RW	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

KAS

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 d
2. Edition
En.

PE 8 ZW 150/120 RS 1019/11 RQUV 300-1200 ZWA 51 R
Komb.-Nr. 0 402 438 020
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 11.83
Firm: MTU
Engine: MB 8 V 331

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.85	1200	8,0-21,0	ca.30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a = - mm Speed regulation At 1230-1240 min⁻¹ less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min 3	Fuel-delivery characteristics: min 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1200	18 mm RW	300 Idle = 8,0 mm RW	-	-	-	-

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
by Robert Bosch GmbH D 7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K20

Test specifications Fuel injection pumps and governors

PE 6 ZW 150/120 RS 1021/11 RQUV 300-1200 ZWA 51 R

Komb.-Nr. 0 402 436 052

1 - 2 - 3 - 4 - 5 - 6

0 - 45-120-165-240-285° ± 0,5° (±0,75°)

Replaces 11.83

Firm: MTU

Engine: MB 6 V 331

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 85	1200	8,0-21,0	ca. 30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0 -2,0		730	0					

Torque control travel a = mm Speed regulation: At 1230-1240 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
1200	18 mm RW	300 Idle = 8,0 mm RW	-	-	-	-

Checking values in brackets

03.84

Test specifications Fuel injection pumps and governors

WPP U01/4 MTU 29,9 c

10. Edition

En.

PE 8 ZWM 140/120 RS 19/11 RQUV 300-1100 ZWA 40 R
Komb.-Nr. 0 406 038 018

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Replaces
Firm 11.83
Engine MTU MB 837 Ba (660 PS)

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1100		C Sp 2	9,0 (13,0)	C Sp 2	
300			8,0 (12,0)		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min 10	Control-rod travel mm 11
max. 9	1100	15,0-18,2	-	-	-	26	300	6,8-7,5	-	-
	1150	10,4-14,8					120	12,0-14,0		
	1200	4,8-10,8					250	8,0-10,2		
	1250	0-6,8					400	2,8-4,3		
	1330	0					500	0,9-2,9		
							700	0		

Torque control travel a = - mm Speed regulation: At 1130-1145 min⁻¹ 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	mm RW ~~cm³/1000 strokes~~ 7
1100	323,0-327,0 (320,0-330,0)	-	500	238,0-250,0 (235,0-253,0)	100	18,0-18,2 mm RW
			300	64,0-69,0	1220	RW max. 5 mm

Checking values in brackets

03.84

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K22

K22

Test specifications Fuel injection pumps and governors

En.

WPP 001/4 MTU 22,4 c
5. Edition

Replaces 11.83
Firm MTU
Engine MB 833 Ea 500

PE 6 ZWM 140/120 RS 38/11   RQU 425/1100 ZWA 37 DR
Komb.-Nr. 0 406 036 026
1 - 2 - 3 - 4 - 5 - 6
0 -45 -120-165-240-285° ± 0,5° (± 0,75°)

Governor adjustement according to VDI-I-420/112 Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm from BDC Zyl. 6

Rotational speed min 1	Control rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque control valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080		C. Sp. 2	9,0 (14,0)		
550		C. Sp. 5	11,0 (16,0)		
425			12,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min 2	Control rod travel mm min 3	Medium rated speed: Control lever deflection degrees 4	min 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min 8	Control-rod travel mm 9	Torque control: min 10	Control-rod travel mm 11
max.	600	18,0-18,5	(Position of slider)			ca. 27	600	1,4-1,8	-	-
ca. 58	1100	17,6-18,0					200	17,0-18,0		
	1150	13,6-16,2					350	10,0-14,0		
	1200	9,0-12,4					425	6,0-6,4		
	1250	3,6-8,5					500	2,6-4,2		
	1350	0 - 1,0					1100	1,4-1,8		
							1160	0		

Torque control travel a = -- mm   Speed regulation At 1130 min⁻¹ 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 °C) min 1	cm³/1000 strokes 2	Control rod stop at speed min 3	Fuel-delivery characteristics min 4	idle stop cm³/1000 strokes 5	Starting fuel delivery min 6	mm RW 7
1080	352,0-356,0 (349,0-359,0)	-	550	277,0-295,0 (273,0-299,0)	100	18,0-18,2 mm RW
	Shutoff solenoid 0,5 - 1,5 mm in front of stop		425	Idle 57,0-63,0	High 1220	idle speed RW max. 5 mm

Checking values in brackets

03.84

K23

BOSCH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 d

3. Edition

En.

PE 8 ZWM 140/120 RS 1018/11 RQU 350-500/1050 ZWA 59 DR
Komp.-Nr. 0 406 038 021
Governor adjustement according to VDT-I-420/112
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45 ± 0,5 (± 0,75)

Note VDT-W-Gen./7

Replaces 11.83
Firm MTU
Engine MB 837 Ea
537 kW (730 PS)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm from BDC Zyl. 8

Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pretension (torque control valve)
500	18,0	373,0-378,0	11,0 (16,0)	369,0-382,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1050		C, Sp. 2	10,0 (15,0)		
300		C, Sp. 5	9,0		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Medium rated speed: Control lever deflection degrees 4	min 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min 8	Control-rod travel mm 9	Torque control: min 10	Control rod travel mm 11
ca. 62	700	18,0	ca. 43	500	6,6-9,1	ca. 27	300	7,1-8,3	-	-
	1070	17,6-18,0		400	12,0-17,0		100	15,3-18,0		
	1150	9,6-14,0		570	0-4,0		200	12,0-15,7		
	1230	0,4-7,0		660	0		400	1,5-5,2		
	1300	0					520	0		

Torque control travel a = 0 mm Speed regulation At 1075-1085 min⁻¹ less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min 1	cm³/1000 strokes 2	Control rod stop at speed min 3	~~Characteristic~~ Leerlauf min 4	cm³/1000 strokes 5	Starting fuel delivery min 6	cm³/1000 strokes 7
1050	358,0-362,0 (355,0-365,0)	-	300	80,0-90,0	100	18,0-18,2 mm RW
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

K24

2s

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,6 c

2. Edition

En.

Replaces 2.83
Firm: MTU
Engine: MB 873

PEV 12 ZWM 160/120 RS 1030/11 RQU 425-600/1300 ZWA 62-1
Komb.-Nr. 0 406 030 999
Note installation and testing instructions KH/VSK 40JP1.
1- 4-10- 7- 5 - 2 - 12- 9 - 3 - 6 - 8 - 11
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)
Specifications apply to test tubing 1 680 750 069. Please note instructions on sheet 2!
All test specifications apply only to Bosch fuel-injection-pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque control valve)
1300	12,0	375,0-385,0	16,0 (24,0)	372,0-388,0	
1300	6,0	113,0-127,0	18,0 (27,0)	110,0-130,0	
425	6,0	31,0-51,0	16,0 (24,0)	27,0-55,0	
1300		C Sp. 2			
425	6,5	C Sp. 5	12,0		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Control lever deflection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	min⁻¹ 10	Control-rod travel mm 11
50 ± 0,5	800	12,0-12,5	ca.31	600	6,4-6,6	ca.18	425	6,4-6,6	-	-
	1300	13,5		800	0,5-2,0		300	10,8-14,0		
	12,5	1325-1340		1300	0,5-2,0		500	3,2-5,3		
	4,0	1445-1485					640	0		
	0	1495-1605								

Torque control travel a = - mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics Idle min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
1300	381,0-385,0		425	72,0-76,0	-	-
1300	RW = 13,5 mm	Full-load screw contacting		zu. Streuung 12,0		

Checking values in brackets

11.83

* Adjusted with KDEP 1533

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
© Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany.

Inlet pressure 3 bar with overflow quantity 10 - 12 l/min (measured at return).

Instead of an overflow valve connect a manually-operated valve of at least 1/2" nominal width into the return. Overflow quantity as well as inlet pressure must be observed precisely.
Also note that the calibrating fluid temperature 42° - 45°C must be measured at the return.

L2

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 f
2. Edition
En.

PE 8 ZWM 150/120 RS 1035 RQU 300-500/1100 ZWA 59 DR
Komb.-Nr. 0 406 038 024
1-2-6-3-4-5-7-8 je 45° ± 0,5° (± 0,75°)
Governor adjustment according to VDT-I-420/112

Replaces 11.83
Firm: MTU
Engine: MB 837 EA - Italien

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6(2,45-2,65) mm (from BDC)

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	527,0-537,0	14,0(21,0)	524,0-540,0	
1000	9,0	175,0-195,0	12,0(18,0)	170,0-200,0	
300	9,0	104,0-124,0	16,0(24,0)	99,0-129,0	
1100	12,3	Sect.C	12,0(18,0)		
800	13,2		16,0(24,0)		
425	6,7		12,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm 2	Control-rod travel min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.65	800	18,0-18,5	ca.39	500	7,0	ca.33	425	6,6-6,9	1100	12,3
	1100	12,3					300	13,0-15,0	800	13,1+0,2
	11,3	1125-1140	ca.19	300	7,0		400	7,8- 9,0		
	5,0	1189-1215					500	1,0- 3,3		
	0	1255-1275					535	0 - 0,5		

Torque control travel a = 0,2 mm +0,05 Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1100	302,0-308,0 (300,0-310,0)	700 (Stop)	800	331,0-351,0 (326,0-356,0)	425	53,0-59,0

Checking values in brackets

03.84

L3

L3

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 g
1. Edition
En.

PE 8 ZWM 160/120 RS 2001 RQUV 300-1050 ZWA 65 R

Komb.-Nr. 0 406 038 023

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

Replaces
Firm MTU
Engine 396-03
960 kW

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622,0-636,0	20,0 (30,0)	619,0 - 639,0	-
1000	9,0	220,0-248,0	28,0 (42,0)	215,0 - 253,0	
300	9,0	104,0-128,0	16,0 (24,0)	99,0 - 133,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 82	1050	18,0	ca. 27	375	8,0	ca.21	300	8,0	-	-
	17,0	1055-1075		200	14,3-17,2		200	10,8-14,2		
	4,0	1150-1210		300	10,3-11,8		400	3,9-5,0		
	1250	0-2,0		500	1,9-3,7		590	0		
				720	0					

Torque control travel a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
Not known The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.		300 = RW 8,0 mm idle stop	-	-	-	-

Checking values in brackets

03.84

L4

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 L
1. Edition
En

PES 4 M 55 C 320 RS 152-1
RSF 375/2300 M 55

Komb.Nr. 0 400 074 964/Sales model 0 400 074 965

1 - 3- 4 - 2
0-90-180-270

supersedes

company Daimler-Benz
engine OM 601
53 kW
Europa

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel RW 20,0-22,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	12,1+0,1	3,1-3,2	0,25(0,3)			
375	6,4-6,6	0,5-0,6	0,10(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			
Before starting testing, see back for important information!						

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 (1)	min.12,6	250	50 (7)	11,3-11,5	2200	(12)	100	min. 20,6
(2)	6,4- 6,6	375	(8)	8,8- 9,2	2500	(13)	1800	11,8-12,0
(3)	**	400	(9)	-		(14)	1000	12,1-12,2
(4)	-		(10)	0-1,0	2950			
(5)	2,5	630-730	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,0-35,0 (32,0-36,0)	2500* 8,8-9,2	1800	34,0-35,5 (33,0-36,5)	100	min.55	6,0 (12a)
					375	5,0-6,0 (4,5-9,0)	1,0
			1000	31,0-32,0 (30,0-33,0)			1,5
					2500	22,0-26,0 (21,0-27,0)	2,5 See (15)
							3,0 Point 8 a (16)

Checking values in brackets

Cd.2,4 less control rod travel than in Column 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
© 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

1. ** Position the idle-speed auxiliary spring at n = 400 min^{-1} so that the control-rod travel is forced further by 0.1 ≤ 0.2 mm.

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1.9 - 2.0 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 46°. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30°. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

5. overlow valve 1 469 990 351

6 *FB (start of delivery) difference between max. and min. value: 1° camshaft

7 Set the idle at the PLA aneroid box. To do so, release the lock nut.

8 Set the pneumatic idle increase (PLA):

   At 0.4 bar overpressure, n = 425 min^{-1}, RW (control-rack travel) = 8.4-9.9 mm (12-20 cm^3/1000 strokes).

9 Check for leaks (vacuum test) at the PLA aneroid box

   Apply 0.8 bar to the PLA aneroid box through a 3-way cock and a pressure gauge. Using the 3-way cock, separate the vacuum supply from the PLA and the pressure gauge. Permissible pressure drop = 30 mbar in 15s.

10 FBG (start of delivery sensor) adjustment

   Adjustment and locking of FBG as per the FB average value of all cylinders, 19.5 ± 0.2 (0.3) °camshaft after cylinder 1.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 L 1
1. Edition
En

PES 4 M 55 C 320 RS 152-1
RSF 375/2250 M 55-1

supersedes
company Daimler Benz
engine OM 601
53 kW
Sweden

Komb.Nr. 0 400 074 959/Sales model 0 400 074 960
1 - 3 - 4 - 2
0-90-180-270
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) RW 20,0-22,0 mm Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	12,1+0,1	3,1-3,2	0,25(0,3)			
375	6,4-6,6	0,5-0,6	0,10(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Befor starting testing, see back for important information!

Set uniform delivery according to the values in [ ] Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 (1)	min.12,5	250	50 (7)	11,3-11,5	2200	(12)	100	min. 20,6
(2)	6,4-6,6	375	(8)	8,8-9,2	2500	(13)	1800	11,8-12,0
(3)	**	400	(9)	-		(14)	1000	12,1-12,2
(4)	-		(10)	0-1,0	2950			
(5)	2,5	630-730	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,0-35,0 (32,0-36,0)	2500* 8,8-9,2	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 (12a)
					375	5,0-6,0 (4,5-9,0)	1,0
							1,5
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5
							3,0 See Point 8 a (15) (16)

Checking values in brackets

Ca. 2,4 less control rod travel than in Column 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

L7

L7

1. ** Position the idle-speed auxiliary spring at n = 400 min^{-1} so that the control-rod travel is forced further by 0.1 - 0.2 mm.

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1.9 - 2.0 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 46°. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30°. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

5. overlow valve 1 469 990 351

6 *FB (start of delivery) difference between max. and min. value: 1° camshaft

7 Set the idle at the PLA aneroid box. To do so, release the lock nut.

8 Set the pneumatic idle increase (PLA):

   At 0.4 bar overpressure, n = 425 min^{-1}, RW (control-rack travel) = 8.4-9.9 mm (12-20 cm^3/1000 strokes).

9 Check for leaks (vacuum test) at the PLA aneroid box

   Apply 0.8 bar to the PLA aneroid box through a 3-way cock and a pressure gauge. Using the 3-way cock, separate the vacuum supply from the PLA and the pressure gauge. Permissible pressure drop = 30 mbar in 15s.

10 FBG (start of delivery sensor) adjustment

   Adjustment and locking of FBG as per the FB average value of all cylinders, 19.5 ± 0.2 (0.3) °camshaft after cylinder 1.

L8

En
L3

BOSCH TEST SPECS. IP ASSEMBLY

TEST SHEET: MAC 12,0 g
Edition: 06. 90 (1)
Type number: 0 412 726 822
Type number: 0 421 890 009
CUSTOMER IDENT. NO.: -- --

Pump: PES 6 P 120 A 720 RS 7178
Regulator: RE 30

IP ASSEMBLY 0 402 796 800

Customer-specific details
Customer: MACK
Engine: E 7 - 400
Output kW: 298
at 1/min: -

		Min	Max
T E S T P R E R E Q U I S I T E S			
Test oil inlet temperature	°C	38	42
Overflow valve		2 417 413 011	
Inlet pressure	bar	- - -	
Overflow	l/h	160	170
Calibrating nozzle-holder assembly		1 688 901 101	
Opening pressure	bar	207	210
Perforated plate diameter	mm	0,6	
Test pressure line		1 680 750 008	
Dimensions:			
Outer diameter	mm	6,0	
x wall thickness	mm	2,0	
x length	mm	600	

T E S T S P E C I F I C A T I O N S

S e c t i o n A -
Setting values of injection pump
- Check values denoted by "P"
- No basic setting. Equal delivery setting under Section C

PORT CLOSING

PC setting cyl.		6	
Test pressure	bar	22	24
Prestroke (from BDC)	mm	2,75	2,85
Prestroke (from BDC)	mm	2,70	2,90
Control-rod travel	mm	10,3	10,7
Cam sequence		6 - 2 - 4 - 1 - 5 - 3	
PC difference	°CS	60 each	
tolerance	+/-°CS	0,50	
tolerance	+/-°CS	0,75	

		Min	Max
PC mark	Cyl. No.	6	
Pulse wheel position (PC cam)	°CS	0 of CS CYL 6	
Tolerance	+/-°CS	0.2	
P Tolerance	+/-°CS	0.5	

S e c t i o n B -
Actuator test
- Check values denoted by "P"
- Assembly warm-up time: 3 mins. at n = 600 1/min, U/Norm = 2.5 V

CONTROL-ROD PICKUP SETTING

Test speed	1/min	0	
Setting value			
U/Norm	V	3.10	
Control-rod travel	mm	12.95	13.05
P Control-rod travel	mm	12.90	13.10
Check value			
U/Norm	V	1.70	
Control-rod travel	mm	5.90	6.40
P Control-rod travel	mm	5.85	6.45
Stop position			
U/Norm	V	min.	
Control-rod travel	mm	0.5	1.0
P Control-rod travel	mm	0.4	1.1

SPEED SENSOR SIGNALS

- Test with control rod in stop position

Speed	1/min	60	
pos.amplitude	V	0.8	2.0
P pos.amplitude	V	0.6	3.0
Speed	1/min	600	
Difference Amplitude to amplitude	V	max. 1.4	

Continued on next page

Testoil-ISO 4113

L9

		Min	Max

Section C -

Injection pump with actuator

- Check values denoted by "P"

FUEL DELIVERY TEST AND SETTING

Test point V 1

	Speed	1/min	900	
	U/Norm	V	3,400	
	Fuel delivery	cm3/1000str	269,0	271,0
P	Fuel delivery	cm3/1000str	266,0	274,0
	Dispersion	cm3/1000str	5,0	
P	Dispersion	cm3/1000str	9,0	

Test point L1

	Speed	1/min	325	
	U/Norm	V	1,45	
	Fuel delivery	cm3/1000str	41,0	47,0
P	Fuel delivery	cm3/1000str	38,0	50,0
	Dispersion	cm3/1000str	8,0	
P	Dispersion	cm3/1000str	12,0	

BOSCH TEST SPECS. IP ASSEMBLY

TEST SHEET: VOL 12,2 g
Edition: 06.90 (1)

Pump: PE 6 P 120 A 320 RS 3239
Type number: 0 411 826 785
Regulator: RE 24
Type number: 0 421 890 008
CUSTOMER IDENT. NO.: -- --

IP ASSEMBLY 0 401 996 701

Customer-specific details

Customer:	VOLVO (USA)	
Engine:	TD 122 FPQ	TD 122 FIQ
Output kW:	272	242
at 1/min:	1900	1900

TEST PREREQUISITES

		Min	Max
Test oil inlet temperature	°C	38	42
Overflow valve		2 417 413 064	
Inlet pressure	bar	1.5	
Overflow	1/h	100	120
Calibrating nozzle-holder assembly		1 688 901 019	
Opening pressure	bar	207	210
Perforated plate diameter	mm	0,8	
Test pressure line		1 680 750 067	
Dimensions:			
Outer diameter	mm	6.00	
x wall thickness	mm	1.50	
x length	mm	1000	

TEST SPECIFICATIONS

Section A -
Setting values of injection pump
- Check values denoted by "P"
- No basic setting. Equal delivery setting under Section C

PORT CLOSING

PC setting cyl.		1	
Test pressure	bar	25	27
Prestroke (from BDC)	mm	2,6	2,7
Prestroke (from BDC)	mm	2,55	2,75
Control-rod travel	mm	10,0	11,0
Cam sequence		1 - 5 - 3 - 6 - 2 - 4	
PC difference	°CS	60 each	
tolerance	+/-°CS	0.50	
tolerance	+/-°CS	0.75	

		Min	Max
PC mark	Cyl. No.	1	
Pulse wheel position (PC cam)	°CS	0 of CS CLY1	
Tolerance	+/-°CS	0.2	
P Tolerance	+/-°CS	0.5	

Section B -
Actuator test
- Check values denoted by "P"
- Assembly warm-up time: 3 mins. at n = 600 1/min, U/Norm = 2.5 V

CONTROL-ROD PICKUP SETTING

Test speed	1/min	0	
Setting value			
U/Norm	V	3.10	
Control-rod travel	mm	12.95	13.05
P Control-rod travel	mm	12.90	13.10
Check value			
U/Norm	V	1.70	
Control-rod travel	mm	5.90	6.40
P Control-rod travel	mm	5.85	6.45
Stop position			
U/Norm	V	min.	
Control-rod travel	mm	0.5	1.0
P Control-rod travel	mm	0.4	1.1

SPEED SENSOR SIGNALS

- Test with control rod in stop position

Speed	1/min	60	
pos.amplitude	V	0.8	2.0
P pos.amplitude	V	0.6	3.0
Speed	1/min	600	
Difference Amplitude to amplitude	V	max. 1.4	

Continued on next page

		Min	Max

S e c t i o n C -

Injection pump with actuator

- Check values denoted by "P"

FUEL DELIVERY TEST AND SETTING

Test point V 1

	Speed	1/min	700	
	U/Norm	V	3,440	
	Fuel delivery	cm3/1000str	251,0	254,0
P	Fuel delivery	cm3/1000str	248,0	257,0
	Dispersion	cm3/1000str	5,0	
P	Dispersion	cm3/1000str	9,0	

Test point L1

	Speed	1/min	250	
	U/Norm	V	1,360	
	Fuel delivery	cm3/1000str	17,0	27,0
P	Fuel delivery	cm3/1000str	14,0	30,0
	Dispersion	cm3/1000str	5,0	
P	Dispersion	cm3/1000str	9,0	

BOSCH TEST SPECS. IP ASSEMBLY

TEST SHEET: DEE 10,1 k
Edition: 06.90 (1)
Type number: 0 412 016 729
Type number: 0 421 890 006
CUSTOMER IDENT. NO.: -- --

Pump: PES 6 P 110 A 720 RS 3231
Regulator: RE 24

IP ASSEMBLY 0 402 196 701

Customer-specific details
Customer: JOHN DEERE
Engine: 6101 HRW 02 (tractor)
Output kW: 224
at 1/min:

		Min	Max
T E S T P R E R E Q U I S I T E S			
Test oil inlet temperature	°C	38	42
Overflow valve		2 417 413 057	
Inlet pressure	bar	1.5	
Overflow	l/h	-	-
Calibrating nozzle-holder assembly		0 681 343 009	
Opening pressure	bar	172	175
Perforated plate diameter	mm	-	-
Test pressure line		1 680 750 015	
Dimensions:			
Outer diameter	mm	6.00	
x wall thickness	mm	1.50	
x length	mm	600	

T E S T S P E C I F I C A T I O N S

S e c t i o n A -
Setting values of injection pump
- Check values denoted by "P"
- No basic setting. Equal delivery setting under Section C

PORT CLOSING

PC setting cyl.		1	
Test pressure	bar	25	27
Prestroke (from BDC)	mm	3.45	3.55
Prestroke (from BDC)	mm	3.40	3.60
Control-rod travel	mm	9.0	12.00
Cam sequence		1 - 5 - 3 - 6 - 2 - 4	
PC difference	°CS	60 each	
tolerance	+/-°CS	0.50	
tolerance	+/-°CS	0.75	

		Min	Max
PC mark	Cyl. No.	1	
Pulse wheel position (PC cam)	°CS	10.5 of CS CYL1	
Tolerance	+/-°CS	0.2	
P Tolerance	+/-°CS	0.5	

S e c t i o n B -
Actuator test
- Check values denoted by "P"
- Assembly warm-up time: 3 mins. at n = 600 1/min, U/Norm = 2.5 V

CONTROL-ROD PICKUP SETTING

Test speed	1/min	0	
Setting value			
U/Norm	V	3.10	
Control-rod travel	mm	12.95	13.05
P Control-rod travel	mm	12.90	13.10
Check value			
U/Norm	V	1.70	
Control-rod travel	mm	5.90	6.40
P Control-rod travel	mm	5.85	6.45
Stop position			
U/Norm	V	min.	
Control-rod travel	mm	0.5	1.0
P Control-rod travel	mm	0.4	1.1

SPEED SENSOR SIGNALS

- Test with control rod in stop position

Speed	1/min	60	
pos.amplitude	V	0.8	2.0
P pos.amplitude	V	0.6	3.0
Speed	1/min	600	
Difference Amplitude to amplitude	V	max. 1.4	

Continued on next page

Testoil-ISO 4113

L13

		Min	Max

S e c t i o n C -

Injection pump with actuator

- Check values denoted by "P"

FUEL DELIVERY TEST AND SETTING

Test point V 1

	Speed	1/min	1100	
	U/Norm	V	2.706	
	Fuel delivery	cm3/1000str	176.0	178.0
P	Fuel delivery	cm3/1000str	173.0	181.0
	Dispersion	cm3/1000str	5.0	
P	Dispersion	cm3/1000str	9.0	

Test point L1

	Speed	1/min	425	
	U/Norm	V	1.450	
	Fuel delivery	cm3/1000str	12.0	20.0
P	Fuel delivery	cm3/1000str	9.0	23.0
	Dispersion	cm3/1000str	6.0	
P	Dispersion	cm3/1000str	10.0	

L14

BOSCH TEST SPECS. IP ASSEMBLY

TEST SHEET: VOL 12.2 f
Edition: 06. 90 (1)
Type number: 0 411 826 772
Type number: 0 421 890 008
CUSTOMER IDENT. NO.: -- --

Pump: PE 6 P 120 A 320 RS 3207
Regulator: RE 24

IP ASSEMBLY 0 401 996 700

Customer-specific details
Customer: VOLVO
Engine: TD 122 FS
Output kW: 290
at 1/min: 2050

		Min	Max
T E S T P R E R E Q U I S I T E S			
Test oil inlet temperature	°C	38	42
Overflow valve		2 417 413 064	
Inlet pressure	bar	1.5	
Overflow	l/h	100	120
Calibrating nozzle-holder assembly		1 688 901 019	
Opening pressure	bar	207	210
Perforated plate diameter	mm	0,8	
Test pressure line		1 680 750 067	
Dimensions:			
Outer diameter	mm	6.00	
x wall thickness	mm	1.50	
x length	mm	1000	

T E S T S P E C I F I C A T I O N S

S e c t i o n A -
Setting values of injection pump
- Check values denoted by "P"
- No basic setting. Equal delivery setting under Section C

PORT CLOSING

PC setting cyl.		1	
Test pressure	bar	25	27
Prestroke (from BDC)	mm	3,6	3,7
Prestroke (from BDC)	mm	3,55	3,75
Control-rod travel	mm	10,0	11,0
Cam sequence		1 - 5 - 3 - 6 - 2 - 4	
PC difference	°CS	60 each	
tolerance	+/-°CS	0.50	
tolerance	+/-°CS	0.75	

			Min	Max
PC mark	Cyl. No.	1		
Pulse wheel position (PC cam)	°CS	0 of CS CYL1		
Tolerance	+/-°CS	0.2		
P Tolerance	+/-°CS	0.5		

S e c t i o n B -
Actuator test
- Check values denoted by "P"
- Assembly warm-up time: 3 mins. at n = 600 1/min, U/Norm = 2.5 V

CONTROL-ROD PICKUP SETTING

Test speed	1/min	0	
Setting value			
U/Norm	V	3.10	
Control-rod travel	mm	12.95	13.05
P Control-rod travel	mm	12.90	13.10
Check value			
U/Norm	V	1.70	
Control-rod travel	mm	5.90	6.40
P Control-rod travel	mm	5.85	6.45
Stop position			
U/Norm	V	min.	
Control-rod travel	mm	0.5	1.0
P Control-rod travel	mm	0.4	1.1

SPEED SENSOR SIGNALS

- Test with control rod in stop position

Speed	1/min	60	
pos.amplitude	V	0.8	2.0
P pos.amplitude	V	0.6	3.0
Speed	1/min	600	
Difference Amplitude to amplitude	V	max. 1.4	

Continued on next page

Testoil-ISO 4113

L15

		Min	Max

Section C -

Injection pump with actuator

- Check values denoted by "P"

FUEL DELIVERY TEST AND SETTING

Test point V 1

	Speed	1/min	700	
	U/Norm	V	3,100	
	Fuel delivery	cm3/1000str	248,0	251,0
P	Fuel delivery	cm3/1000str	245,0	254,0
	Dispersion	cm3/1000str	5.0	
P	Dispersion	cm3/1000str	9.0	

Test point L1

	Speed	1/min	250	
	U/Norm	V	1,300	
	Fuel delivery	cm3/1000str	19,0	27,0
P	Fuel delivery	cm3/1000str	16,0	30,0
	Dispersion	cm3/1000str	5,0	
P	Dispersion	cm3/1000str	9,0	

BOSCH TEST SPECS. IP ASSEMBLY

TEST SHEET: DEE 7,7 I
Edition: 06.90 (1)
Type number: 0 412 026 727
Type number: 0 421 890 006
CUSTOMER IDENT. NO.: -- --

Pump: PES 6 P 120 A 720 RS 3184
Regulator: RE 24

IP ASSEMBLY 0 402 196 700

Customer-specific details
Customer: JOHN DEERE
Engine: 6.466 A
Output kW: 161
at 1/min:

		Min	Max
T E S T P R E R E Q U I S I T E S			
Test oil inlet temperature	°C	38	42
Overflow valve		2 417 413 057	
Inlet pressure	bar	1.5	
Overflow	l/h	-	-
Calibrating nozzle-holder assembly		1 688 901 101	
Opening pressure	bar	207	210
Perforated plate diameter	mm	0,6	-
Test pressure line		1 680 750 015	
Dimensions:			
Outer diameter	mm	6.00	
x wall thickness	mm	1.50	
x length	mm	600	

T E S T S P E C I F I C A T I O N S

S e c t i o n A -
Setting values of injection pump
- Check values denoted by "P"
- No basic setting. Equal delivery setting under Section C

PORT CLOSING

PC setting cyl.		1	
Test pressure	bar	25	27
Prestroke (from BDC)	mm	3.55	3.65
Prestroke (from BDC)	mm	3.50	3.70
Control-rod travel	mm	9.0	12.00
Cam sequence		1 - 5 - 3 - 6 - 2 - 4	
PC difference	°CS	60 each	
tolerance	+/-°CS	0.50	
tolerance	+/-°CS	0.75	

		Min	Max
PC mark	Cyl. No.	1	
Pulse wheel position (PC cam)	°CS	10.5 of CS CYL1	
Tolerance	+/-°CS	0.2	
P Tolerance	+/-°CS	0.5	

S e c t i o n B -
Actuator test
- Check values denoted by "P"
- Assembly warm-up time: 3 mins. at n = 600 1/min, U/Norm = 2.5 V

CONTROL-ROD PICKUP SETTING

Test speed	1/min	0	
Setting value			
U/Norm	V	3.10	
Control-rod travel	mm	12.95	13.05
P Control-rod travel	mm	12.90	13.10
Check value			
U/Norm	V	1.70	
Control-rod travel	mm	5.90	6.40
P Control-rod travel	mm	5.85	6.45
Stop position			
U/Norm	V	min.	
Control-rod travel	mm	0.5	1.0
P Control-rod travel	mm	0.4	1.1

SPEED SENSOR SIGNALS

- Test with control rod in stop position

Speed	1/min	60	
pos.amplitude	V	0.8	2.0
P pos.amplitude	V	0.6	3.0
Speed	1/min	600	
Difference Amplitude to amplitude	V	max. 1.4	

Continued on next page

	Min	Max

Section C -

Injection pump with actuator

- Check values denoted by "P"

FUEL DELIVERY TEST AND SETTING

Test point V 1

	Speed	1/min	1100	
	U/Norm	V	2,710	
	Fuel delivery	cm3/1000str	140,0	142,0
P	Fuel delivery	cm3/1000str	137,0	145,0
	Dispersion	cm3/1000str	6,0	
P	Dispersion	cm3/1000str	10,0	

Test point L1

	Speed	1/min	425	
	U/Norm	V	1,400	
	Fuel delivery	cm3/1000str	17,0	25,0
P	Fuel delivery	cm3/1000str	14,0	28,0
	Dispersion	cm3/1000str	8,0	
P	Dispersion	cm3/1000str	12,0	